BAIRNSDALE AIRPORT MASTER PLAN

FOR EAST GIPPSLAND SHIRE COUNCIL

June 2020

REHBEIN Airport Consulting

Executive Summary

Bairnsdale Airport is an essential hub providing access for aerial emergency services to the Gippsland Region. It is a key location for the deployment of fire fighting and other emergency response activities for the East Gippsland region which was evident with the recent East Gippsland Bushfires.

During the 2019/20 summer period Bairnsdale Airport was the major hub for fire fighting and military aircraft bushfire emergency response. During this activity the airport facilities and aviation infrastructure experienced immense pressure, including:

- The logistics of 90-110 aircraft movements per day by all types of aircraft ranging from light fixed wing aeroplanes to large helicopters such as the Chinook, Blackhawk and the Sikorsky/Erickson S-64 Skycrane;
- Lack of hardstand areas for aircraft parking combined with inadequate pavement strength required many of the heavy helicopters use the East Gippsland Field Days site and airside land adjacent the terminal building;
- Helicopters using the movement areas and the presence of approximately 22 aircraft on a regular basis restricted lighter aircraft from using the area due to downwash and clearances required;
- The fuel facility bowsers were used to maximum capacity and temporary stationing of three mobile fuel trucks was required to service the operations;
- In addition to the aircraft, there were 170 army personnel on site, a deployed air traffic control centre and security teams to maintain safety of the aircraft, operation and public at all entry gates 24 hours.

During 'business as usual' Bairnsdale Airport supports seasonal aerial fire fighting activities, and a dedicated fire base building and associated support infrastructure has recently been constructed by the Department of the Environment, Land, Water and Planning. Air Ambulance Victoria (AAV) is a daily user of the airport, which hosts the highest number of fixed wing patient retrievals of any Victorian regional airport.

In addition to essential aviation facilities, the airport land also supports a variety of non-aviation community uses including agricultural research activities, community events (East Gippsland Field Days), performing arts, shooting sports facilities and motor sports.

The objective of this Airport Master Plan is to facilitate structured development through the provision of appropriate infrastructure and services, which supports the existing economic and community activities and maximises further opportunities. Council's focus is to develop the Airport to complement and support the community and businesses of East Gippsland. Council's objectives are twofold:

- To protect and direct airport development for larger aircraft to capture any future opportunities that could support and encourage interest in the region for business development and tourism; and
- Informed development of airport land to focus on and support the existing emergency services and aviation related activity.

The aerodrome has two sealed runways, with a single sealed taxiway linking their northern ends with the terminal and fuel facilities. The runways are suitable for current operations but are insufficient to allow larger aircraft to operate at Bairnsdale.

The fuel facility is an important asset and AAV use the facility regularly to support their fixed wing and helicopter retrievals throughout the region. The terminal building serves as a patient transfer facility and has provided central operating area for emergency response coordination.

Concept development layouts have been identified that support development objectives. There are a number of considerations that determine the concept plan. Most importantly, the physical characteristics of the critical aviation infrastructure required for the airport to meet its future compliance obligations are set out in standards which are issued and monitored by the regulatory agency – the Civil Aviation Safety Authority (CASA). Within this framework, alternative layouts and development staging are prepared to meet the immediate needs and opportunities identified through consultation with airport users and other stakeholders.

The result is an overall concept layout that establishes the Bairnsdale Airport main precincts and aviation facility development considered necessary to support the short, medium and long term growth opportunities. The overall concept allows the airport to grow into the future, ensuring the ability of catering to larger aircraft

while providing a framework for the wide range of landside and airside activities at the airport to work together safely.

The overall concept layout incorporates the following key aspects:

- **Airside Infrastructure**, in particular the runways and taxiways necessary for the take-off , landing and ground movement of aircraft to access the terminal and hangar areas. The central component of this is planning for the future extension and widening of Runway 04/22 and upgrade to accommodate Code 3C aircraft in accordance with the required CASA standards
- **Terminal Precinct** to accommodate short and long-term passenger movements;
- A **Patient Transfer Facility** for Air Ambulance Victoria;
- The **DELWP Fire Base**;
- **Additional Hangar Lots** for code A and code B aeroplanes;
- **Rationalisation of airside and landside areas;** and
- **Retention of existing non-aviation uses**, where this is possible safely without constraining aviation-related opportunities.

In order to implement the overall concept layout there will be some impacts on existing non-aviation activities:

- Dragway Inc. and a portion of Southern Farming Systems will need to be relocated to maintain compliance under the new Part 139 MOS 2019 (effective August 2020) and to allow for the development of Runway 04/22 with physical characteristics and obstacle restriction compliant with CASA standards. The introduction of the revised Part 139 MOS 2019 which comes into effect August 2020 (note there is a transition period), both the Dragway and Southern Farming Systems will need to relocate for Runway 04/22 currently to remain compliant under the new standards. There is scope for Council to pursue the grandfathering provisions which allows Council as the operator of the existing airport to maintain their facility to the standard that applied at the time the runway was constructed. However, the grandfathered status will only remain until the runway is upgraded by the aerodrome operator at which time the standards at the time will apply and as such the Dragway and Southern Farming Systems will need to relocate;
- The Bairnsdale Pistol Club and Clay Target Club activities should also be considered in the long term development of the airport. These facilities do not present a hindrance to the physical development required of the aviation infrastructure. Ongoing diligent management of the activities will be essential to ensuring no unacceptable risks are presented to the safety of aviation operations. Nevertheless, it is possible that, by nature of these activities, there may be perceived risks which could potentially deter prospective aviation businesses, particularly the attraction of charter or passenger service activities to the airport.
- The Bairnsdale & District Motorcycle Club and Bairnsdale Kart Club are potential prime airside-accessible land. Depending on the pace of development, there may be a requirement in the longer term to develop this land for aviation activities that require airside access.

Table of Contents

APPENDIX A

APPENDIX B

Revision	Date	Description	Author	Verifier	Approver
0	19/12/2019	DRAFT	BMW	BJH	BJH
1	08/01/2020	DRAFT	BMW	BJH	
2	26/06/2020	DRAFT (Preliminary Business Plan Included)	BMW	BJH	BJH
3	01/07/2020	FINAL	BMW	BJH	BJH

1. INTRODUCTION

1.1 BACKGROUND

Bairnsdale Airport is located approximately seven (7) kilometres south west of the town of Bairnsdale, at 345 Bengworden Road. Bairnsdale is approximately 300 kilometres east of Melbourne.

The airport is one of three aerodromes owned and operated by East Gippsland Shire Council, along with Orbost and Mallacoota. Council has a full time Aerodrome Coordinator who manages the operation of all three Council-owned airports in the Shire.

Bairnsdale Airport has an estimated 3,000 aircraft movements per year, with activity progressively increasing each year.

Bairnsdale Airport currently hosts aerial firefighting activities and the recent construction of a fire base building and associated support infrastructure by the Department of the Environment, Land, Water and Planning (DELWP).

Air Ambulance Victoria (AAV) is a daily user of the airport with the most fixed wing patient retrievals of any Victorian regional airport. The AAV helicopter also uses the airport to re-fuel.

Bairnsdale Airport hosts a solid group of private flyers, flight training and charter activities. The airport land also supports a variety of non-aviation community activities. These include agricultural research activities, community events, motor and shooting sports facilities and performing arts.

In 2018, Bairnsdale Airport won the Australian Airports Association (AAA) 'Small Regional Aerodrome of the Year' award.

1.2 PURPOSE

East Gippsland Shire Council requires a contemporary Master Plan to replace the previous plan developed in 2009. The Master Plan will assist in guiding the future development of Bairnsdale Airport both as a physical site and as a business

The driver for this Master Plan is Council's objective to facilitate and support economic and community development through the provision of appropriate infrastructure and services. Council also wishes to explore the appropriate utilisation of the surrounding airport land.

Council intends to use this Master Plan to assist in developing commercial opportunities for airport tenants and users while attracting new business and investment to the airport. Council's direction for Bairnsdale Airport is to support its community through:

- Planning protection for larger aircraft to capture any future opportunities that could support and encourage interest in the region for business development and tourism opportunities; and
- The appropriate development of airport land to support the existing tenant functions.

1.3 OBJECTIVES

Council's objectives are that the Master Plan will:

- Review current and emerging regulatory standards and report on any service or infrastructure improvements necessary to ensure that the Airport is compliant with current regulatory standards and to identify any improvements that may be necessary to meet known future regulatory standards or to allow the Airport and/or aircraft to operate safely and unrestricted;
- Consider current and planned aviation and other activity, including actively engaging with existing tenants, businesses and users to identify the infrastructure required to meet the needs of existing aircraft operators, businesses and other users and tenants of Airport land and/or facilities including the ability of those operators and businesses to grow in response to demand;
- Consider the opportunities to increase compatible activity at the Airport, in the context of the land area and infrastructure being principally for aviation purposes, to identify the infrastructure and/or services required to meet the needs of potential aircraft operators, businesses and other users or tenants of Airport land and/or facilities;

- Consider and identify any constraints that might impede realisation of Council's vision and objectives for the Airport;
- Consider the opportunities to increase revenue to Council, through aviation and non-aviation functions or services, including assessment of risk, and benefit / cost analysis for any identified opportunities;
- Consider means by which the significance of the Airport as a community asset might be promoted;
- Consider how to safeguard the long-term functionality of the Airport, including consideration of any regulatory, environmental, heritage, land use, strategic planning or other matters;
- Consider a staged implementation strategy for Airport development, including estimated investment for each stage and potential sources of capital, to guide planning and investment decisions;
- Consider the suitability of the current non-aviation tenants with regard to potential future development of the airport for aviation associated purposes; and
- Consider the location and type of establishment for an events precinct of suitable capacity with room for future expansion within the Airport Land footprint.

2. EXISTING SITUATION

This section describes the existing facilities, and the aviation and non-aviation related activities, at Bairnsdale Airport.

2.1 SITE DESCRIPTION

Bairnsdale Airport is located four (4) kilometres south of the Princes Highway, at 345 Bengworden Road. The airport is seven (7) kilometres south west of Bairnsdale and 300 kilometres east of Melbourne. The location is illustrated on **Figure A** at **Appendix A**.

The airport site is made up of several parcels of land all in Council ownership and totals approximately 275 hectares in area.

The airport operation is managed by a full time Aerodrome Coordinator, who is also responsible for the other aerodromes in the shire (Mallacoota Airport and Orbost Airport) which are also owned by Council.

2.2 EXISTING FACILITIES

A description of the existing infrastructure and facilities is provided below and illustrated on **Figure B** and **C** at **Appendix A**.

2.2.1 RUNWAYS

Bairnsdale Airport has two sealed runways with orientation 04/22 and 13/31.

Runway 04/22 is 1,101 metres long and 18 metres wide, within a 90 metre wide runway strip and has a PCN of 11 / F / B / 560 (81 psi) / T. The runway is provided with low intensity runway lighting available on a pilot activated system with an instrument approach RNAV-Z (GNSS) Runway 22.

Runway 13/31 is 850 metres long and 18 metres wide, within a 90 metre in runway strip. Runway 13/31 was recently re-sealed but has no lighting and is not available for night operations. Runway 13/31 from the 13 threshold to the cross runway intersection has taxiway lighting to allow aircraft to taxi Runway 13/31 to access or exit Runway 04/22 during night operations.

2.2.2 TAXIWAYS

Taxiway access is provided to the Runway 13 and Runway 22 thresholds.

The east-west taxiway provides access to the main apron / terminal area and connects to the north south taxiway which accesses Runway 22 end.

Aircraft are required to back track the runways for use of Runway 04 and Runway 31.

2.2.3 TERMINAL BUILDING AND MAIN APRON

A terminal building at the northern end of the airfield adjacent Runway 13 provides for public use and amenities. The terminal building is equipped with 24 hour CCTV and secure fencing to delineate airside and non-airside. It includes office facilities for airport management.

The terminal building is used by various aviation related activities on the airport, including the pick-up and drop off of passengers as well as by Air Ambulance Victoria to transfer patients in difficult weather conditions.

The main apron located in front of the terminal building is used by itinerant users and Air Ambulance Victoria for transfer of patients. It can accommodate Code B aeroplanes with clearance from the east-west taxiway.

2.2.4 FUEL

Fuel bowsers with adjacent parking are located to the west of the terminal building and accessed directly off the east-west taxiway. Both Avgas and Jet A-1 fuel is available with credit card payment options. The facility is monitored by 24 hour CCTV.

The fuel facility is owned by Council, and operated and maintained by Aero Refuellers. In 2018/19 approximately 70,000 litres of Avgas and 40,000 litres of Jet A-1 was sold. Aero Refuellers have indicated they would ideally have a site compound at 35 metres square if planning and space allows.

Two additional fuel pumps to the west of the Aero Refuellers bowsers are owned and operated by Bairnsdale Air Charter for their exclusive use. Aero Refuellers also supply the fuel for the Bairnsdale Air Charter.

2.2.5 HANGAR AREA

There are approximately 13 hangars on the airport. These are located in the northern portion of the site, north west of the terminal, main apron and fuel facilities, as indicated on **Figure C** at **Appendix A**.

WWII Hangars

Four (4) of these hangars are WWII hangars that have had some minor modifications to make them usable for the storage of aircraft. These four hangars are leased out to both private and aero club facilities, with the hangars having multiple users leasing each space.

WWII hangar No. 1 is leased with the provision that approximately two weeks of the year (in April) the tenants must relocate their aircraft to provide access for Lindenow Lions Club who occupy the hangar for the duration of the East Gippsland Fields Days event.

Council acknowledges the historical importance of the WWII hangars and the history of the area, although a number of stakeholders expressed concerns that these hangars are not secure and do not protect the aircraft from the weather and/or nesting wildlife sufficiently.

Private Hangars

Hangars Nos. 5 through 13 have been built by the tenants on land leased from the Council. Council has provided sealed apron and taxilane access to the east of the hangars and direct land side access to the west.

Hangar Access

Hangars Nos. 2, 3, 4 and 5 do not have formed taxi access. Hangars Nos. 3, 4, 5 and 7 also do not have direct land side access. It would seem that these hangars are accessed by vehicles driving on the airside to access the hangar.

Aircraft Parking

Additional aircraft parking aprons are located off the north-south taxilane. These aircraft parking areas are intended to provide access to hangars, one of which (No. 13) has been constructed to the north of one of the apron areas.

Longer term aircraft parking is available in front of hangars Nos 9, 10, 11 and 12.

Six (6) ground tie down points are available in front of Hangar Nos. 9, 10 and 11 as well as south of Hangar No 13 on the sealed areas. Tie downs are not provided by Council but are permitted to be used as supplied by the individual pilots.

Council charges $7.20 per night per aircraft where parking is for longer than 24 hours. This system allows Council to have contact with owners of aircraft and provide the code to the locked security gate.

2.2.6 NAVIGATION AND VISUAL AIDS

Bairnsdale Airport is equipped with:

- Pilot Activated Low Intensity Runway Lighting (PAL LIRL);
- Apron and Taxiway edge lighting;
- An Automatic Weather Information Station (AWIS);
- A published RNAV-Z (GNSS) instrument approach procedure for Runway 22; and
- A primary Illuminated wind direction indicator and secondary windsock.

2.3 EXISTING AVIATION RELATED OPERATIONS

2.3.1 AIR AMBULANCE VICTORIA

Air Ambulance Victoria (AAV) is a frequent user of the airport and operates both fixed wing and rotary aircraft into Bairnsdale. Bairnsdale handles the highest number of fixed wing aeromedical retrievals in regional Victoria. AAV operates King Air B200 fixed wing aircraft which visit Bairnsdale, primarily for patient transfer, as often as two to three times a day.

AAV also operate AW139 helicopters, which utilise the airport primarily for fuel, approximately once a fortnight. The AW139 operates under a pavement concession for its high tyre pressure against the published PCN.

2.3.2 DEPARTMENT OF ENVIRONMENT, LAND, WATER AND PLANNING

Bairnsdale Airport is a key operational base for the Department of Environment, Land, Water and Planning (DELWP). DELWP has recently constructed a facility on the eastern boundary of the airport land, north east of the Runway 22 threshold.

The base operates as' pre-determined dispatch' and there are typically two (2) pilots at the base on call with up to two (2) aircraft pre-positioned. Helicopters are also regularly parked at Bairnsdale during the fire season and, depending on the nature of the fires during the season, may include the Sikorsky S-64 Skycrane.

2.3.3 BAIRNSDALE AIR CHARTER

Bairnsdale Air Charter offers charter flights in multi or single engine aircraft. In addition, the business offers:

- Air services including aerial freight, survey, photography and surveillance;
- Scenic flights around the Gippsland Lakes and Ninety Mile Beach; and
- Flight training, operating out of both Bairnsdale Airport and Latrobe Valley Airport. BAC offers recreational, private and commercial pilots flight training.

2.3.4 RIVIERA AERONAUTICS

Riviera Aeronautics is an approved Recreational Aviation Australia (RA-Aus) flying school. The school uses a single Tecnam T92 and has approximately 20 students enrolled at any one time.

2.3.5 PRIVATE FLYERS

There are several private pilots using the Bairnsdale Airport for recreational use and as a base to transport themselves and their services such as medical and legal services around the state.

2.3.6 ITINERANT USERS

Country Wide Helicopter Services located at Barwon Heads Airport, operates into Bairnsdale for charter and Jet A-1 fuel. They operate an Airbus Squirrel AS350 accessing the airport 8 – 10 times a year.

2.4 EXISTING NON-AVIATION RELATED USES

There are a number of significant non-aviation uses based on the airport land. These include several community clubs and associations.

2.4.1 EAST GIPPSLAND FIELD DAYS

The East Gippsland Fields Days (EGFD) is a yearly event held in mid- to late-April and which has been running for almost 35 years. The event is a significant event for the local community and economy. It attracts approximately 8,000 visitors each year and hosts around 270 exhibitors encompassing a range of agricultural and rural industries.

The EGFD is owned by the Lindenow Lions Club and operated by a management committee that employs one operations manager and a bookkeeper.

EGFD occupies a large section on the north side of the airport that the Lindenow Lions Club has improved through the provision of internal access roads and power over the years.

The WWII hangar to the east of the site (Hangar No.1) is currently leased to private aircraft owners who must vacate the hangar for two to three weeks over the EGFD event as it is occupied by the EGFD team. The EGFD perimeter also cuts off airside access to this hangar.

The EGFD management is keen to construct a large shed within the site for security, and to further enhance the area through landscaping

The current leased area is adequate for the event and at the time of writing there was no interest in expanding the lot size.

2.4.2 BAIRNSDALE CLAY TARGET CLUB

Bairnsdale Clay Target Club is an Australian Clay Target Association (ACTA) affiliated club located in the northwest quadrant of the airport.

The Club includes about 80 members including several Australian Olympic and World Champion competitors. The Club sees daily use, although most frequented during the summer months due to the extended daylight hours. January to March is the busiest time.

From a safety perspective, range assessments are conducted annually to determine the distance that can be safely used and to ensure this remains within the club's leased area. The Club advises that strict protocol exists for gun use with clear and defined Range Orders in place.

2.4.3 BAIRNSDALE KART CLUB

Bairnsdale Kart Club operates a kart facility in the north east corner of the airport, with access off Aerodrome Road. The Kart Club has operated from the Airport since the early 1990s. Racing days are the last Sunday of each month, with the exception of December and January.

2.4.4 BAIRNSDALE AND DISTRICT MOTORCYCLE CLUB

Bairnsdale Motorcycle Club is a motorsports club which operates a motocross track for various uses. The Club is positioned in the north east corner of the airport. The motocross track is adjacent the intersection of the east-west and north-south taxiways. Entrance to the Club is via Aerodrome Road.

2.4.5 BAIRNSDALE PISTOL CLUB

The Bairnsdale Pistol Club is located in the north east corner of the Airport sharing the northern boundary of both the Bairnsdale Kart Club and the Bairnsdale and District Motorcycle Club. The airport airside boundary forms the western edge of the site. The Bairnsdale Pistol Club operates all year round for day- and night-time

shooting. The site includes a club house as well as 25 metre and 50 metre all-weather undercover shooting ranges.

2.4.6 BAIRNSDALE PRODUCTION LINE THEATRE COMPANY

Bairnsdale Production Line Theatre Company currently leases a 24 metre by 12 metre area north of the EGFD area. The company has built a storage shed and adjoining toilet block and is working with Council to provide an additional building on site which will accommodate a full size stage.

2.4.7 GIPPSLAND MOTORPLEX (BAIRNSDALE DRAG WAY INC.)

Bairnsdale Drag Way leases a site on the eastern side of the airport adjacent Aerodrome Road, immediately south of the Runway 22 threshold.

The Drag Way is used for a variety of motorsport events and sport driver training. The facility caters for all levels of driver training including 4WD training track. Access to the site is via Aerodrome Road and independent of the airport.

The Bairnsdale Drag Way is interested in improving the site with low level lighting, buildings and signage.

2.4.8 SOUTHERN FARMING SYSTEMS (GIPPSLAND AGRICULTURAL GROUP INC.)

Gippsland Agricultural Group Inc. (GAgG) occupies approximately 11 hectares of land on the north west side of the airport.

GAgG was formed by a group of farmers interested in specific research into farming methods and products suitable for the arable dry-land country throughout Central and East Gippsland. The site is used for trials to improve the productivity and profitability of dry-land farmers by studying four key areas of dry-land agricultures. These include soil heath, pastures, grain and fodder production and livestock.

GAgG will have dedicated subcommittees to focus on the four key areas and drive the trial site planning to provide measurable and relevant research into continuous improvement in dry-land agriculture. GAgG anticipates opportunities in training and employment in the agriculture sector with educational institutions such as TAFE Gippsland and University of New England.

GAgG seek to expand their trial site and for incorporation into the East Gippsland Field Days. In addition, in cooperation with Council the main priority is to replace the boundary fence for rotational grazing and site visits. Also, there is a need to improve water reticulation and laneways for better access to the site.

3. PLANNING CONTEXT

3.1 AVIATION REGULATORY CONTEXT

Bairnsdale Airport is owned and operated by the East Gippsland Shire Council and is a Registered aerodrome under the Civil Aviation Safety Regulations 1998 and associated Manual of Standards (MOS) Part 139 Aerodromes V1.14 January 2017. Bairnsdale Airport was registered on 20 April 2004.

The Civil Aviation Safety Authority (CASA) is the independent statutory authority that conducts the safety regulation of civil air operations in Australia. The *Civil Aviation Regulations 1988* and the *Civil Aviation Safety Regulations 1998*, made under authority of the *Civil Aviation Act 1988*, provide for general regulatory controls for the safety of air navigation.

3.1.1 CIVIL AVIATION ACT

Although this Act does not have any sections directly related to aerodromes, it does form the basis of the regulations and CASA's role in enforcing regulations. Under Section 3 of the Act an aerodrome is defined as an area authorised by the regulations for use as an aerodrome.

3.1.2 CIVIL AVIATION SAFETY REGULATIONS 1998 (CASRs)

The CASRs are divided into a number of parts addressing matters such as regulatory administrative procedures, aircraft certification and airworthiness, aircraft standards in a variety of categories such as; engines, balloons, aeroplanes and rotorcraft; registration and identification of aircraft, training and licensing, flight rules and aircraft operations (whether for air transport, aerial work, recreational or aerobatic activities). Each part may be supported by the Manual of Standards (MOS) and/or Advisory Circulars (ACs).

Specifically for aerodrome operators, CASR Part 139 – Aerodromes prescribes the requirements for aerodromes used in air transport operations.

3.1.3 MANUAL OF STANDARDS

Manuals of Standards are CASA policy documents which provide the specifications (standards and procedures) for the minimum requirements which are deemed to satisfy obligations under the relevant CASRs.

The *Manual of Standards Part 139 – Aerodromes* (MOS Part 139) v1.14 January 2017, is the current legislative instrument (as of December 2019) that sets out the standards for certified and registered aerodromes as well as the standards for radio communication facilities applicable to all aerodromes.

In August 2019, CASA issued a revised standard, the *Part 139 (Aerodromes) Manual of Standards 2019* (Part 139 MOS), which will be effective 22 August 2020. This revised Part 139 MOS:

- Establishes a single certification framework for regulated aerodromes (certified);
- Mandates when an aerodrome must be certified;
- Sets out the standards for the design, construction, maintenance and operation of certified aerodromes;
- Defines the requirements for aerodrome radio communication services at all aerodromes; and
- Requires the identification and reporting of hazards on aerodromes, and within the prescribed airspace.

Aerodromes that were certified or registered prior to August 2020 will be deemed to be certified on commencement of the new rules. This means that existing registered and certified aerodromes will be conditionally accepted by CASA to operate in accordance with the new rules until the end of the respective transition periods. A deemed aerodrome that meets all the applicable requirements of Part 139 MOS will be issued a new aerodrome certificate provided they meet the transition timeframes.

Under the Part 139 MOS (the new rules) an aerodrome cannot have a terminal instrument flight procedure (TIFP) unless it is certified. A TIFP means an instrument approach procedure or instrument departure procedure as defined by the CASRs. A TIFP is considered to apply if it is published in the Aeronautical Information Publication and features the aerodrome name in the title or is an approved procedure intended for that aerodrome. Bairnsdale Airport currently has an instrument approach procedure, RNAV-Z (GNSS) Runway 22. Therefore, for Bairnsdale Airport to continue under the new rules with this procedure continuing

to be published, it will need to transition from the current registered status to become a certified aerodrome under the new Part 139 MOS.

The Part 139 MOS introduces a scalable certification structure linked to the complexity of the aerodrome operating environment. The trigger criterion that support the scalable certification structure is based on:

- The number of air transport passengers per annum (financial year);
- The aircraft movement numbers per annum (financial year); and
- Whether there are scheduled international air transport operations at the aerodrome.

There is then a set of management system provisions that are subject to these trigger criteria. Further information can be found through CASA's advisory circulars at www.casa.gov.au/AC [1] .

In light of the new Part 139 MOS taking effect August 2020, which is in advance of implementation of the majority of the development indicated in this Master Plan, the concepts in this document are based only on the standards that will apply post- August 2020.

3.1.4 ADVISORY CIRCULARS (AC)

An AC is intended to provide recommendations and guidance to illustrate a means, but not necessarily the only means, of complying with the CASRs. ACs are explanatory notes and are not mandatory. They are used to guide decision making and are continually developed in consultation with the aviation industry as best practice evolves.

CASA is currently preparing a series of ACs relating to the Part 139 MOS. These are expected to become available progressively over the course of 2020.

3.1.5 CIVIL AVIATION REGULATIONS 1988 (CARS)

The CARs are generally being replaced by the *Civil Aviation Safety Regulations 1998*, until they are completed replaced, aerodrome operators' need to adhere to both sets of regulations. The CARs are supported by the Civil Aviation Orders (CAOs) published by CASA and must be complied with and the Civil Aviation Advisory Publications (CAAPs) which provide guidance and information for compliance.

3.1.6 CIVIL AVIATION ADVISORY PUBLICATIONS (CAAPS)

CAAPs provide guidance and information in a designated subject area, or show a method acceptable to CASA for complying with related CAR. Although the CAAPs relate to the CARs, with the CASRs 1998 being supported instead by ACs, there are CAAPs in particular that continue to have relevance to operations at aerodromes.

3.2 LOCAL CONTEXT

East Gippsland is a region of diversity and opportunity with a growing economy creating new business and employment opportunities in the region. Council's Vision for East Gippsland is ***"East Gippsland is the most liveable region in Australia****. A place of natural beauty, enviable lifestyles, and opportunities".*

[1] For additional information with respect to the new rules, contact CASA via email aerodromes_regs@casa.gov.au or telephone 131 757).

Economic and Industry Profile

Traditional major industries within the region have included farming, agriculture, forestry, tourism and hospitality, fishing, timber, education and health care services.

Emerging industries are food manufacturing and processing based on its credible food bowl heritage, particularly in dairy, vegetables and meat production. The region is also recognised as having significant mining potential. Should the mineral sands mine (Kalbar Resources) at Glenaladale and Stockman Mine at Benambra get the go ahead and prove successful then there may be the introduction of fly in fly out of workers to the area which may increase aircraft traffic substantially out of Bairnsdale Airport. A potential RPT airline has recently made contact with Council and investigations into the feasibility of establishing this service currently under way. In addition, Council has also been approached by a flight training school and negotiations about setting up this facility at Bairnsdale Airport are also in progress.

There are considerable opportunities for supporting growth in food production and processing whilst also delivering sustainable outcomes for natural ecosystems.

Tourism has a large profile in East Gippsland as it is viewed as a sector with the potential for economic growth. The tourism industry attracted 1.343 million visitors in 2017-18, contributing $325.7 million to the regional economy. East Gippsland and the Gippsland region as a whole is seen as a region with great tourism potential, especially if it can increase the awareness of its nature-based experiences.

With a population of around 46,142, East Gippsland offers a stable workforce of approximately 16,539, low unemployment, a strong industry-training sector and job opportunities across a range of sectors and professions.

Most jobs are found in these sectors:

- Health (16.0%)
- Retail (12.1%)
- Agriculture, Forestry & Fishing (9.7%)
- Other (62.2%)

Total output in East Gippsland is estimated at $4,434.131 million. The major contributors to output in East Gippsland are:

- Manufacturing $ 699.724m (15.8%)
- Construction $ 597.338m or (13.5%)
- Agriculture, Forestry & Fishing $ 541.079m or (12.2%)
- Other $ 2,595.991m or (58.5%)

With eight major towns and a diverse range of industries, East Gippsland has a solid demand for skilled employees across a wide range of industries and offers excellent opportunities for trade-qualified and professional people.

The food production sector is of vital importance to East Gippsland with food manufacturing and production fundamental drivers of the regional economy. As at June 2018 the total output of commodities for East Gippsland was $738.438m consisting of fruit and vegetable crops, livestock (meat & products), bakery products, seafood, beverage and food support services.

Lakes Entrance is the home of one of Australia's largest fishing fleets, while Mallacoota is the base of a significant abalone industry. Fish catches are supplied to markets in Melbourne and Sydney.

The tourism industry is also strong, with East Gippsland attracting 1.343 million visitors to June 2018, contributing $325.716 million for the region, approximately 7.3% of total output.

3.3 REGIONAL CONTEXT

3.3.1 THE GIPPSLAND REGION

The Gippsland Region covers the south eastern part of Victoria and is made up of six LGAs: Bass Coast Shire, the Shire of Baw Baw, Shire of East Gippsland, Latrobe City, South Gippsland Shire and the Shire of Wellington.

Known for its natural resources and extensive coastline, waterways, national parks and cultural heritage places, the Gippsland region's natural resources underpin the wider Victorian economy through power generation. The region's brown coal resources and energy infrastructure produce about 90 per cent of the state's electricity. Gippsland also supplies about 30 per cent of Victoria's milk, 25 per cent of its beef and 14 per cent of its fruit and vegetables.

Climate change and the introduction of initiatives to reduce greenhouse gas emissions will have major implications for the Gippsland economy and will need to move to a low-carbon economy and diversify its economic activities. Challenges for growth in the Gippsland region are identified in the *Gippsland Regional Growth Plan May 2014*. These include identifying new and improving existing tourism opportunities planning and adapting settlements and infrastructure to respond to the impacts of climate change, including increased risk from natural hazards and improving the region's transport network to provide access to markets, services and employment.

3.3.2 GIPPSLAND REGIONAL GROWTH PLAN

The Gippsland Regional Growth Plan May 2014 (The Plan) is one of eight growth plans developed across regional Victoria to provide a general direction for land use and development while detailing planning frameworks for key regional cities and centres. The Regional Growth Plans were developed in partnership between local government and state agencies and authorities and reflect state and local government objectives. The Plan provides a long-term view of the Gippsland Region to 2041 and beyond, as the basis of regional coordination and future planning of infrastructure to support regional land use objectives.

The Plan forecasts Gippsland to become a fast growing part of Victoria, increasing by 116,000 people to a population of 386,000 by 2041. This Plan predicts that with significant investment in the region particularly focussed on clean and renewable energy could increase the population to up to 465,000 by 2041.

Places closest to Melbourne are expected to grow fastest. Population growth will not occur evenly across the region, and the Plan identifies Latrobe City, as the regional city, to accommodate the main increase in population and economic growth. The supporting network of regional centres including Bairnsdale, Leongatha, Sale, Warragul and Wonthaggi, along with the neighbouring towns, will also benefit from this growth.

The Gippsland Regional Growth Plan is underpinned by four guiding principles with key objectives:

> *Principle 1: Strengthen economic resilience by growing a more diverse economy that is supported by new investment, innovation and value –adding in traditional strengths.* Key objectives include to facilitate commercial centres, diversify the service and manufacturing industries and expand and develop regional tourism.
>
> *Principle 2: Promote a healthy environment by valuing Gippsland's environmental and heritage assets, and by minimising the region's exposure to natural hazards and risks.* Key Objectives include to manage and plan for the risks Gippsland's communities and economy from natural hazards.
>
> *Principle 3: Develop sustainable communities through a settlement framework comprising major urban centres that ensures residents have convenient access to jobs, services, infrastructure, and community facilities.* Key Objectives are to promote sustainable growth and development while valuing natural and cultural heritage.
>
> *Principle 4: Deliver timely and accessible infrastructure to meet regional needs for transport, utilities and community facilities.* A key objective is to support road, rail and port improvements.

The Plan identifies that the region can build on its manufacturing capabilities, particularly in aircraft manufacturing. In addition, the region can further develop its tourism industry by building on opportunities from environmental assets such as the Gippsland Lakes, Wilsons Promontory, the Australian Alps and Phillip Island.

Significant areas of Gippsland are at risk from natural hazards including flood, bushfire and sea level rise. Transport and communication networks will be increasingly important as part of the management and response to natural hazards and extreme events. The Plan states the importance of Gippsland's transport network which consists of highways and the Bairnsdale railway corridor. The network will be under pressure in the years ahead from population and economic growth.

The Plan identifies a vision that by 2041 Gippsland is recognised as having attracted remarkable levels of investment in economic and urban growth inspired by the region's assets and potential. Bairnsdale is identified to support tourism opportunities associated with environment and landscape attractions and to protect key agriculture and forestry land and support food production for domestic and export markets.

3.3.3 EAST GIPPSLAND SHIRE

The East Gippsland Shire adjoins five other municipalities: Alpine, Towong and Wellington Shires in Victoria and Bombala and Bega Valley Shires in New South Wales in the far eastern corner of Victoria and covers almost 21,000 square kilometres. East Gippsland is knowns for its natural diverse environment, with the largest navigable lakes system in Australia and extensive and undisturbed natural areas including coasts and forests; national parks and wilderness areas.

Bairnsdale is the main town in the Shire which also encompasses Lakes Entrance, Orbost, Paynesville, Metung, Omeo and Mallacoota. In addition, there are approximately 10 smaller towns and large number of rural settlements or localities. Bairnsdale has the largest population and is also the regional retail and service centre. Bairnsdale has one of the two hospitals serving the region, Bairnsdale Regional Health, and one tertiary institution, East Gippsland TAFE.

The East Gippsland population has increased steadily since 2008 at 41,416 people to 2018 at 46,818 people[2]. East Gippsland workforce is said to be stable with low unemployment and a strong industry-training sector and job opportunities across a range of sectors and professions. Over the next three years, employment is expected to increase by 2.1 per cent mainly with the transport and storage, communications and business services sectors. The largest sector by output in East Gippsland is manufacturing with food and production as fundamental drivers. East Gippsland supports 16,539 jobs with an annual economic output of $4.686 billion.

East Gippsland holds approximately 2.8 per cent of the share of regional Victoria's visitors. The industry appears to be strong growing steadily from 2015 with a total of just over 1.1 million visitors to the area to over 1.4 million visitors in 2018. The most significant overall change from 2009 to 2018 is the increase of 46.2 percent and 45.2 per cent in international and domestic overnight visitors respectively[3].

3.3.4 BAIRNSDALE GROWTH STRATEGY

The aim of the Bairnsdale Growth Strategy is to provide clear direction of the Shire of East Gippsland and local community on the sustainable growth and development of Bairnsdale over the next 20 years. The Growth Strategy Volume 1 is supported by technical material that is provided in the Background Report Volume 2 November 2009. The Growth Strategy identifies:

- Bairnsdale as the regional services centre of East Gippsland
- Its core role is the provision of education, recreation, employment and retail opportunities for the broader municipal population
- The economic profile is defined by jobs in construction, manufacturing, service industry, health, education and retail workers.
- The strengths are in food production and processing

[2] REMPLAN *East Gippsland Economy Profile* Accessed: 13 December 2019 www.app.remplan.com.au

[3] Tourism Research Australia. International Visitor Survey and National Visitor Survey, YE Dec18.

- There is an aging population that requires a diverse range of services and facilities
- The natural environment is an important asset that requires careful management
- The Bairnsdale Airport is identified within the background report Volume 2as a regional airport servicing South-East Gippsland.

3.4 PLANNING CONTEXT

3.4.1 EAST GIPPSLAND PLANNING SCHEME

The East Gippsland Planning Scheme (EGPS) sets out the vision and strategic direction for the municipality. The EGPS provides for the use and development of land, expectations for areas and land uses and for the implementation of State, regional and local policies affecting land use and development.

State Planning Policy Framework

Section 18.04-1S *Planning for airports and airfields* objective is to strengthen the role of Victoria's airports and airfields within the state's economic and transport infrastructure, facilitate their siting and expansion and protect their ongoing operation. This section also lists the policy document *National Airports Safeguarding Framework* as a relevant document to consider.

Section 21.10 *Transport* states that the Council shares responsibility for the management, maintenance and development of airports with the Victorian Government.

Local Planning Policy Framework

The Local Planning Policy Framework (LPPF) sets out the Municipal Strategic Statement and the Local Planning Policies for East Gippsland.

The Municipal Strategic Statement (MSS) identifies the natural environment and the vibrant tourism industry that offers potential for significant development. Clause 21.09-3 *Tourism* Objective 1 is to develop and promote East Gippsland as a major tourist destination. Clause 21.10 *Transport* states that the Shire will continue to provide residents, commercial operators and visitors with efficient ports services and will vigorously protect the three airports from inappropriate development.

The EGPS objective is to protect airports from inappropriate development (EGPS Clause 21.10-3 Airports). The Strategies in place to do so include:

- Strategy 1.1 ensuring the airports expansion potential is not constrained by inappropriate uses of adjoining land;
- Strategy 1.2 support the increased use of the airports for passenger, freight and training purposes
- Strategy 1.3 support the upgrade of at least one of the private airfields at Lakes Entrance.
- Bairnsdale City vision (East Gippsland Planning Scheme 26/09/2019 Update):

  Enhance Bairnsdale's role as the principal commercial and retail centre in the East Gippsland region, supplying a diverse range of goods and services and is the regional centre for public sector administration.

3.4.2 LAND USE ZONING

The EGPS includes the following planning controls with respect to Bairnsdale Airport.

Public Use Zone

Bairnsdale Airport land is zoned Public Use Zone – Transport (PUZ4) as illustrated below. The purpose of the PUZ is to recognise public land use for public utility and community services and facilities consistent with the intent of the public land.

Design and Development Overlay

The objective of the Design and Development Overlay – Schedule 8 (DDO8) is to ensure that development will not compromise the minimum approach and take-off gradients for safe operation of the aerodrome and to discourage residential development in the runway approach corridors where such development is likely to be affected by aircraft noise. In making decisions on applications that are within the DDO8 the responsible

authority must consider minimum clearance, the need to site residential buildings away from the approach and take-off corridors and building construction for the minimisation of the effect of aircraft noise.

Environmental Significance Overlay

The Environmental Significance Overlay – Schedule 1-43 (ESO1-43) overlays the west road boundary of the airport as the site includes suitable habitat for either the local population or the local occurrence of a species or community. The objective to be achieved within the ESO1-43 is to ensure that development occurs so as not to adversely impact upon the environmental values of the site and to conserve and enhance the environmental sustainability and ecological integrity of these values. Schedule 1-43 identifies the airport site as Goonnure Wildlife Corridor. The environmental significance of this site is a wildlife corridor and Gippsland Plains grassy woodland.

Vegetation Protection Overlay

The purpose of the Vegetation Protection Overlay (VPO) is to ensure that development minimises loss of vegetation, preserves existing trees and other vegetation and recognises vegetation protection areas as locations of special significance and important while maintaining habitat corridors for indigenous fauna and encouraging the regeneration of native vegetation. The vegetation significance and objectives for the airport land are specified in Schedule 1 to the VPO (VPO1). VPO1 pertains to the Tambo-Bairnsdale Roadside Vegetation Protection Network and seeks to protect high conservation value roadside vegetation within Government road reserves.

4. STAKEHOLDER CONSULTATION

4.1 CONSULTATION ACTIVITIES

The Bairnsdale Airport Master Plan has been prepared in consultation with the Council and stakeholders, which has been held as follows:

- Inception meeting with Council representatives on 7 August 2019 at Council chambers;
- An informal discussion session for airport users and tenants held at the Bairnsdale Airport terminal building as a drop-in session between 10am and 1 pm on 8 August 2019;
- One on one phone calls with external stakeholders between August – November 2019; and
- A briefing to Councillors undertaken in February 2020.

4.2 EMERGING THEMES

Generally, comments focussed around the positive and proactive steps the current Airport Manager was undertaking. The airport is generally very well run and kept, taxiways and runways are in good condition with no restrictions that makes it user friendly.

Specific themes which emerged through the consultation with airport tenants and users are summarised below.

4.2.1 HANGAR SPACE

Stakeholders raised a need for hangar space and a layout plan standardising the hangars to be developed. There were mixed views on whether the private lots should be leased or available for freehold however, expression leaned mostly towards leased arrangements.

There was a feeling that the existing hangar area requires better maintenance, specifically the need to remove gravel at doors of buildings and in and around taxiways on an ongoing basis. Such maintenance is needed due to the stones coming continually coming loose in the seal.

4.2.2 WWII HANGARS

There are several WWII hangars on the airport. Stakeholders who lease these hangars feel that significant investment is required to improve these hangars. Specifically, they lack doors and here is some concern with theft of fuel from aircraft, lack of weather protection and birds nesting in hangars.

The joint use of the WWII hangar with Field Days event is inconvenient and imposes a need for the tenant/s to find another location for aircraft each year for a relatively long duration. It is also not a perfect arrangement for EGFD as they would ideally like to use the hangar year round.

4.2.3 PATIENT TRANSFER AREA

AAV, being a frequent (daily) user of the airport expressed the need to have a dedicated patient transfer area that is undercover, lit and private for the purposes of transitioning patients from road to air in a comfortable environment.

Being able to transfer patients in privacy and out of the weather is important both for patients and paramedics. The transfers from the road ambulance to the aircraft, requires paramedics to move the patient from one bed to another as the beds are different for each transport vehicle/aircraft patients.

AAV will occasionally use the terminal building if the weather is bad, but this is not ideal if other members of the public are present.

Other stakeholders also expressed that such a facility would be a valuable thing for the community.

4.2.4 TAXIWAY CONDITION

Stakeholders spoke to the need to re-seal the taxiway as stone consistently come loose in the current seal which is damaging to aircraft.

4.2.5 FENCING / SECURITY

Stakeholders recognise the importance of the lockable airside gate which Council recently installed. However, issues were raised as to the operation of the gate and how it is managed. Some stakeholders raised that it is difficult to know who is the' last one out' to lock the gate. Particularly also for AAV using the combination pad to access the key is a lot of back and forth for the paramedical especially in the early hours of the morning. Suggestions were made to move to a swipe card access with an automatic locking/closing gate.

Stakeholders also raised the condition of the fence in that there are large gaps below which compromise the overall security, and a feeling that various other sections of the airport need fencing for security. These include the EGFD, Drag Way and the Gippsland Agricultural Group (Southern Farming Systems) site. Better delineation overall between airside and non-airside is considered necessary.

4.2.6 ADDITIONAL AIRPORT IMPROVEMENTS

Stakeholders made various suggestions to improve the airport as a whole. Importantly it was raised that the airport for some is the first impression of the Bairnsdale community. Suggestions included:

- Update terminal building;
- Install a weather wed-connected camera and broadcast AWIS;
- Install a wind indicator at the exit from private hangar area so as to be visible from hangars;
- Seal the hangar area;
- Provision of more/larger tie down area;
- Additional RNAV instrument approaches for other runways;
- Extend Runway 04/22 to allow for larger aircraft;
- Installation of sewerage system and toilets (EGFD for both on and off airside)
- Improvements to drainage, mains power and low level lighting in the Drag Way.

4.2.7 OTHER OPPORTUNITIES EXPRESSED

Stakeholders spoke regularly to the assets of the region and ways of linking the airport to the greater community. Suggestions include:

- Availability of information on accommodation in the area;
- Establishment of a classic aircraft society / historic aircraft display integrated with the Fields Days
- Preservation and communication of the airport's WWII history and the associated stories to be told;
- Paynesville/Bairnsdale – racing circuit
- Establishment of an 'airpark' on the Bengworden Road boundary (positive and negative comments);
- The attracting a maintenance facility would be of benefit to attract more aircraft
- Stakeholders suggested the aero club is almost non-existent and that the airport community would benefit from establishing an active club, specifically the organisation of fly ins.

4.3 AIRLINE SERVICE OPPORTUNITIES

Contact was made via telephone and email with Sharp Airlines, Regional Express (Rex) and Fly Corporate, who are regional Regular Public Transport (RPT) aircraft operators. No response was received from Sharp Airlines. Rex responded by email that they do not have any plans to commence services to Bairnsdale Airport, Fly Corporate provided useful discussion. Air Club Air was also contacted and provided some information. These are both discussed below.

Contact was also made with a resort operator at Captains Cover in Paynesville on 2 October 2019 but further discussion did not eventuate.

4.3.1 FLY CORPORATE

Fly Corporate currently operates several SAAB 340B (34-seat) and the Metro 23 (19-seat) turboprop aircraft. Fly Corporate is focussed on regional communities and operates from Brisbane, Sydney and Melbourne to regional Queensland and New South Wales. Fly Corporate head office is located in Fyshwick, ACT.

REHBEIN Airport Consulting spoke with Jeff Boyd, Manager Airline Services for Fly Corporate on 22 October 2019. Key points from Fly Corporate perspective are:

- For an RPT service to be viable it requires a core customer base. Other regional services provided by Fly Corporate are underpinned by sectors such as Defence, government departments and/or the mining industry's fly in/fly out requirements. For example:
  - The Dubbo to Brisbane route is designed around the mining sector and as such 50 per cent of the plane is mining. The travel times are therefore designed around the miners schedules that is start and finish times;
  - Inverell has been incorporated into the Narrabri to Brisbane and Sydney routes as the Narrabri routes are supported by mining. Inverell as a port on its own is not viable;
- The biggest issue for Bairnsdale is the relative proximity to Melbourne. Flying from Bairnsdale to Melbourne is not seen as a viable route alternative to a 3-hour drive;
- Typically a catchment population of about 40,000 people is not enough to make a service viable on its own;
- To carry on further discussions, it would be beneficial for Council to demonstrate where people want/need to go, why they want to go there, the frequency they would travel and where they reside. Importantly, is there a sector that could support the services i.e. mining or government?;
- A range of 300 – 350 kilometres is the maximum for an aircraft with 19 seats.

4.3.2 AIR CLUB AIR

Air Club Air (Club Air) is in the inception phases of building a business that would operate a Pilatus PC12 as a membership style airline. The concept is to leverage the cost against the whole network which is how they anticipate to support marginal routes. Passengers would pay a membership fee for three or six months, and aircraft would operate on a scheduled run similar to a public/city bus network.

The PC12 can utilise the Bairnsdale Airport in its current state. Club Air at this stage anticipates launching their charter service mid-2020. They currently seek the support, enthusiasm and partnership with East Gippsland Shire Council to launch the concept.

4.4 SWOT ANALYSIS

Through the stakeholder consultation process, an analysis of key strengths, weaknesses opportunities and threats around Bairnsdale Airport was compiled in collaboration with Council airport personnel. These are summarised as follows.

STRENGTHS	WEAKNESSES
• **Close proximity** to Bairnsdale town • **Close to** tourist attractions particularly the Australian Alps, the Snowy River, Lakes Entrance, Mitchell River Silt Jetties and East Gippsland's Croajingolong National Park • **Town services**, including accommodation, food, emergency services, houses, schools, health care • **Fuel supply** is strategically located and making a difference to emergency services particularly rotary • **Runways** in good condition and appropriate lengths • **non-controlled Common Traffic Advisory Frequency (CTAF)** that allows aircraft to join the circuit and train • **Low operation and maintenance costs** • **Cheaper to operate** businesses as compared to surrounding airports such as • **Recognised by Council** as an important asset that needs to be maintained for the community • **Development space** for additional hangars/businesses • **Utility services available**	• **No fees/charges** to contribute to cost of maintenance • **Large portion of the airport land** leased out to non-aviation operations close to airside activity • **Lack of security fencing** surrounding the non-aviation businesses • **Lack of connectivity** to town centre • **No links/integration/connections** with tourist destinations • **No hire car** facility out of airport
OPPORTUNITIES	**THREATS**
• **Population growth** leading to more aviation activity • **Gateway to tourist destinations** focussed on the natural environment • **Increase patronage** focussed on tourism • **Economic development potential** from tourism • **Building a partnership** with the East Gippsland Field Days • **Fuel stop over** • **Space for additional development** of hangars and/or business/tourism operators to set at airport • **Security fencing** to delineate landside/airside boundaries to increase safety and enable higher use of aerodrome • **User pay** to contribute to infrastructure improvements • **Master Plan** to guide airport development	• **Infrastructure costs** for improvements such as taxiway and apron areas • **Development constraints** such as non-aviation businesses surrounding airside land • **Incompatible non-aviation use** of the airport land

5. STRATEGY DEVELOPMENT

This section describes the objectives of this Master Plan and the principal opportunities for development based on the stakeholder feedback. The key aviation planning parameters are then established to inform the Bairnsdale Airport concept development plan which illustrates the overall long term arrangement of infrastructure and facilities. A staged approach is proposed that accommodates immediate solutions with possible future stages to be undertaken as opportunities arise.

5.1 DEVELOPMENT OBJECTIVES

Council's focus is to develop the Airport to complement and support the community and businesses of East Gippsland. Council's strategic direction in doing so is twofold:

- To protect and direct airport development for larger aircraft to capture any future opportunities that could support and encourage interest in the region for business development and tourism; and
- Informed development of airport land to focus on and support the existing emergency services and aviation related activity.

5.2 GROWTH OPPORTUNITIES

Based on stakeholder feedback and discussions with Council the opportunities for growth at the airport are as follows:

- Air Ambulance Victoria Patient Transfer Station;
- Fuel access for fixed and rotary wing users;
- Additional hangar lots;
- Club facilities and events;
- Charter services;
- Future airline (RPT) services; and
- A heritage and arts precinct.

These are described in the following sections

5.2.1 AIR AMBULANCE VICTORIA PATIENT TRANSFER STATION

Air Ambulance Victoria (AAV) uses Bairnsdale Airport for transferring patients from the hospital with a King Air 350. Bairnsdale has one of the busiest fixed-wing patient transport operations in the state. AAV use the airport on average two to three times a day and have expressed the need for a dedicated patient transfer facility with aircraft and road access at Bairnsdale. A patient transfer facility is significant to the AAV operation for:

- Patient privacy, dignity and respect;
- Wind, rain, sun protection and reduced exposure to inclement weather and extremes of heat and cold;
- A point of care while waiting for the aircraft, particularly when patients condition requires urgent evacuation or deterioration prior to aircraft arrival;
- Availability of power, lighting, air conditioning and bench space; and
- Environmental control measures to improve patient and staff safety during transfer between different transport platforms.

Similar to other Victorian regional airports (who have leveraged government funding) a station would have security access, motorised front and rear doors with running water, heating, cooling and power accommodated within a structure approximately 12 metres by 12 metres.

5.2.2 FUEL ACCESS

AAV rotary operation is undertaken with an AgustaWestland AW139. This helicopter frequents Bairnsdale Airport for the sole purpose of refuelling. This assists AAV response times by improving the distance the helicopter can cover. Maintaining the fuel access and provision of Jet A-1 fuel for the aircraft is important to AAV response to regional areas.

Other users have indicated a demand for MoGas, which is increasingly used by recreational aircraft and private users. There may be an opportunity for the current fuel supplier to respond to this demand if the fuel compound can be formalised and expanded.

5.2.3 ADDITIONAL HANGAR LOTS

Stakeholders spoke to the need for additional hangar lots to be able to construct a hangar for the storage of their aircraft. Interest is focussed on Code A private lots which typically suffice at approximately 18 by 18 metres.

There may also be potential for commercial or business lots, which might be utilised by maintenance operators or other aviation businesses. Sizes of these lots vary depending on the exact user requirements, but are typically around 40 metres wide by 50 metres deep. This size allows flexibility in the range of aircraft sizes (Code A and Code B) as well as surrounding area for use of car parking and/or office/supporting facilities typically sought after for commercial/business lots. The width of the lots can be adjusted to suit the tenants' requirements.

5.2.4 CLUB FACILITIES AND EVENTS

Stakeholders expressed a desire to improve and expand the aviation community through a more active range of events, for example Fly Ins. Club facilities need to remain with a focus on community activities and the welcoming of outside aviation enthusiasts to the Bairnsdale Airport. Club facilities are to be maintained in the Master Plan and additional areas made available for itinerant aircraft parking.

5.2.5 CHARTER OPERATIONS

There is the possibility of increased charter operations to provide passenger services in the short- to medium-term, in the absence of RPT operations. Air Club Air has indicated an anticipated launch of a charter service in 2020 operating a Pilatus PC12. The development plan therefore needs to ensure that such an operation can be supported in the short term at Bairnsdale Airport.

Terminal facilities and non-aviation support infrastructure such as dedicated car parking areas are to be maintained and integrated in the short term, with expansion pathways identified for future growth.

5.2.6 FUTURE AIRLINE (RPT) SERVICES

Council has expressed a requirement for safeguarding the airport to ensure any future opportunities for a regional RPT passenger service can be accommodated. Typically, airlines servicing regional centres around Australia are using aeroplanes such as the SAAB 340, ATR and Dash 8 aircraft. These and other relevant aircraft will be considered in the formation of the critical airport planning parameters.

5.2.7 HERITAGE AND ARTS PRECINCT

Council has expressed the historical significance of the WWII hangars at Bairnsdale Airport. In addition, stakeholders spoke to the unsuitability of these hangars for aircraft, both in terms location and the structural condition.

An objective of the Master Plan is to provide for a possible historic precinct dedicated to the WWII history of the area. Subject to provision of areas for improved hangar facilities, this precinct is best maintained as a landside activity to allow safe and secure access.

5.3 CRITICAL AIRPORT PLANNING PARAMETERS

Central to the development layout planning is the establishment of appropriate airport planning parameters. These are based on the most critical design aircraft intended to use each of the airport facilities and infrastructure.

There are several parameters which contribute to determining the planning and design standards to which the future layout must adhere. These parameters are informed by the growth opportunities outlined above in **Section 5.2**.

5.3.1 THE AERODROME REFERENCE CODE SYSTEM

The standards an aerodrome must meet, it if is to be suitable for use by aeroplanes within a particular range of performance and size, are determined by the aerodrome reference code (ARC) chosen by the operator. This system is established by the International Civil Aviation Organisation (ICAO) and is implemented in Australian aviation standards through the Civil Aviation Safety Authority (CASA).

The ARC links the aerodrome design criteria to the operational and physical characteristics of the design aircraft. The 2019 CASA *Part 139 (Aerodromes) Manual of Standards 2019* (Part 139 MOS) sets out three (3) elements that make up the ARC:

ARC Element 1: Code Number

The ARC code number is one of the key parameters which determine the required physical characteristics of runways and the surrounding obstacle restrictions. The code number is determined by the aeroplane reference field length of the aircraft intended to use a runway. The aeroplane reference field length is a measure of the runway length required by an aeroplane in certain standardised conditions, which allows a comparison between different aircraft to be made. Reference field length is related to, but is not the same as, the physical runway length available. The operational runway length required by aircraft varies dependent on a number of factors such as aircraft load factor, wind direction, temperature and runway slope. It may also be influenced by surrounding obstacles. **Table 1** indicates how the code number is related to aeroplane reference field length.

Table 1: Code Element 1 - ARC Number (or runway code number)

Code number	Aeroplane reference field length
1	Less than 800 m
2	Not less than 800 m
3	Not less than 1,200 m
4	Not less than 1,800 m

Source: Part 139 (Aerodromes) Manual of Standards 2019 [Table 4.01(3)]

ARC Element 2: Code Letter

The code letter is used to define required clearances to objects for aeroplanes manoeuvring on the runways, taxiways and aprons. It is determined by the wingspan of the design aircraft as per **Table 2** below.

Table 2: Code Element 2 - ARC letter

Code letter	Aeroplane wingspan
A	Up to but not including 15 m
B	15 m up to but not including 24 m
C	24 m up to but not including 36 m
D	36 m up to but not including 52 m
E	52 m up to but not including 65 m
F	65 m up to but not including 80 m

Source: Part 139 (Aerodromes) Manual of Standards 2019 [Table 4.01 (4)]

Code Element 3: Outer Main Gear Wheel Span

The Outer Main Gear Wheel Span (OMGWS) relates to the ground-based manoeuvring capability of the aircraft and therefore applies to the movement area pavements, including runways, taxiways and aprons. OMGWS can be in one of four categories as per **Table 3**.

Table 3: Code Element 3 - OMGWS

Aeroplane OMGWS
OMGWS up to but not including 4.5 m
OMGWS 4.5 m up to but not including 6 m
OMGWS 6 m up to but not including 9 m
OMGWS 9 m up to but not including 15 m

Source: Part 139 (Aerodromes) Manual of Standards 2019 [Table 4.01 (5)]

5.3.2 DESIGN AIRCRAFT

The design aircraft is selected by the airport operator to inform the master planning process, by determining the set of standards and regulations which will apply to the airport and which should be adopted in the layout planning.

The design aircraft defines which operations may be accommodated at the airport in the future and, conversely, the operations which the airport will not be able to accept.

Typically, non-passenger (i.e. General Aviation) operations fall into two groups:

- Code 1A/2A aeroplanes, which are typical of private and recreational flying and some smaller charter operations; and
- Code 1B/2B aeroplanes, which are typical of aeromedical, aerial work, charter, freight and other commercial operations.

Most facilities at Bairnsdale can be adequately planned for use by aeroplanes up to ARC 2B. However, certain infrastructure requires protecting for larger aircraft in order to preserve the possibility of RPT airlines services in the future.

Typical aircraft in use for regional RPT services in Australia are listed below in The Dash 8-400 model is currently the largest aircraft regularly operating in regional Australia that is not a jet aircraft. It is expected to maintain its presence in the market for the foreseeable future. As a mature aircraft type, it is possible that smaller variants may be reintroduced in the future to fill the regional airliner ‘gap’. Such variants would likely have similar ARC characteristics to the -400 series aircraft but carry fewer passengers. Therefore the Dash 8-400 is nominated as the design aeroplane for master planning purposes.

Table 4 together with their ARC elements. Of note is that the only aircraft still in production are the 37-50 seat Embraer ERJ jets, the 68-seat ATR 72, and the 72-seat -400. Given this hiatus in regional airliner

production, it is difficult to predict with what type of aircraft might operate regional airline services to places like Bairnsdale in the future. For this reason, it is impossible to have certainty that the ARC will be code letter B, rather than code letter A.

The Dash 8-400 model is currently the largest aircraft regularly operating in regional Australia that is not a jet aircraft. It is expected to maintain its presence in the market for the foreseeable future. As a mature aircraft type, it is possible that smaller variants may be reintroduced in the future to fill the regional airliner 'gap'. Such variants would likely have similar ARC characteristics to the -400 series aircraft but carry fewer passengers. Therefore the Dash 8-400 is nominated as the design aeroplane for master planning purposes.

Table 4: Typical Aircraft Types

Aircraft	Pax	MTOW (kg)	Wingspan (m)	ARC Element 1	ARC Element 2	OMGWS
Metro III / 23	19	7,250	17.4	3	B	5.1
Jetstream 31	19	6,950	15.9	3	B	6.3
Beech 1900D	19	7,770	17.7	3	B	5.8
Embraer ERJ-135/140/145	37-50	19 – 22,000	20.1	3	B	4.8
SAAB 340B	34	13,160	21.5	3	B	7.3(1)
Dash 8-100/200	36	16,470	27.4	3	C	8.6
Dash 8-300	50	19,510	27.4	3	C	8.6
Dash 8-400	72	29,260	28.4	3	C	9.6
ATR72	68	23,000	27.1	3	C	4.9
(1) The SAAB 340B aircraft historically treated as code letter C due to OMGWS > 6m. OMGWS was until 2019 part of ARC code element 2						

Source: Various

6. CONCEPT DEVELOPMENT PLAN

The concept development layouts were developed to incorporate the development objectives, growth opportunities and critical airport planning parameters, as described above. Development concepts have been staged to accommodate short term opportunities while protecting for possible future growth.

The overall development layout as illustrated on **Figure E1** at **Appendix A** identifies the main precincts and aviation related development that will support short, medium and long term growth opportunities. The layout incorporates the following key aspects:

- **Airside infrastructure**, in particular the runways and taxiways necessary for the take-off, landing and ground movement of aircraft to access the terminal and hangar areas;
- **Terminal Precinct** to accommodate short and long-term passenger movements;
- **Patient Transfer Facility** for Air Ambulance Victoria;
- **The DELWP Fire Base**;
- **Hangar Lots** for Code A and Code B aeroplanes; and
- **Non-aviation Uses**.

These are each described in detail in the following sub-sections.

6.1 AIRSIDE INFRASTRUCTURE

Airside infrastructure consists of the runway system, taxiway network and apron areas. All future airside infrastructure is planned in accordance with the Part 139 MOS (2019) which will be effective for all new infrastructure constructed after August 2020.

All taxiways have been labelled on the development concept for the purposes of this Master Plan only. Taxiway naming should be agreed prior to implementation in consultation with the CASA aerodrome inspector to ensure it complies with the applicable taxiway naming conventions at the time.

6.1.1 RUNWAY 04/22

Runway 04/22 is planned ultimately to be upgraded a Code 3C instrument non-precision runway in accordance with the Part 139 MOS. The runway is anticipated to be up to 1,600 metres long and 30 metres wide in order to accommodate the operational requirements of the regional aircraft types which might potentially operate RPT services.

Runway Strip

In accordance with the forthcoming Part 139 MOS, the runway must be contained within a 280 metre wide by 1,720 metre long runway strip. The central 90 metres of the strip must be graded.

Runway End Safety Areas

Runway End Safety Areas (RESAs) will be required at the minimum length of 90 metres and a width of 60 metres (twice the runway width).

The proposed runway, runway strip and RESAs are contained within the existing airport land boundary. However, to allow for the runway development, some of the surrounding non-aviation land uses will need to be restricted.

Pavement Strengthening

The existing portion of the runway will also require strengthening for the proposed aircraft operations. The runway may also require re-profiling to meet the physical grading requirements associated with Code 3C runways.

Runway Turn Pads

Runway turn pads will need to be provided at both ends of Runway 04/22 in accordance with the Part 139 MOS. Runway turn pads are normally located on the right hand side of the runway as viewed when looking in the direction of take-off from that runway end.

6.1.2 RUNWAY 13/31

Runway 13/31 is planned to remain as a Code 1A non-instrument runway. This runway remains as existing, at an overall length of 850 metres and 18 metres wide, contained within a 90 metre wide by 970 metre long runway strip.

For a Code 1A runway the minimum strip width per the Part 139 MOS is 60 metres for use during daylight, or 80 metres if equipped with permanent lighting for use at night. The strip is only required to extend 30 metres beyond each end of the runway. The current strip width exceeds these requirements, but there are operational benefits from retaining the current arrangement.

6.1.3 TAXIWAY ALPHA

The section of taxiway which extends east-west from the Runway 13 threshold to the taxiway intersection leading south to access the Runway 22 threshold, is to be designated as Taxiway Alpha (TWY A).

In the short term Taxiway Alpha remains as existing, accessing the refuelling area, terminal precinct, AAV transfer station and east to the intersect Taxiway Bravo which accesses Runway 22 threshold.

Taxiway Alpha is ultimately planned to be upgraded to accommodate Code C aeroplanes providing access between the Runway 13 threshold and the terminal precinct.

The required width of Taxiway Alpha will dependent on the OMGWS of the aeroplanes operating. However, it will need to be a minimum of 15 metres wide and may be up to 23 metres wide to meet the requirements of the Part 139 MOS. Therefore the taxiway alignment is planned to achieve a 23 metre width if needed.

Clearance to objects (including aircraft parked on the terminal apron) will need to be increased from 20 metres to 26 metres on either side of the centreline. The graded strip width will also increase along the Code C section.

From the eastern end of the terminal precinct Taxiway Alpha will continue eastward as a Code B taxiway accessing the AAV transfer station facility and the hangar developments.

6.1.4 TAXIWAY BRAVO

The section of taxiway extending south from the east end of Taxiway Alpha connecting to the Runway 22 threshold is to be designated Taxiway Bravo (TWY B).

Taxiway Bravo is planned to remain as a Code B taxiway (10.5 metre wide pavement within a 40 metre wide taxiway strip) in accordance with the Part 139 MOS.

6.1.5 TAXILANE CHARLIE

Taxilane Charlie provides access to the northern hangars via Taxiway Alpha. Taxilane Charlie will remain in its existing state as a Code B taxilane - 10.5 metres wide with a minimum 16.5 metres separation distance on either side to structures, parked aeroplanes or other objects.

6.1.6 TERMINAL APRON

The terminal apron located in front of the terminal building will remain as it is currently arranged, accommodating one (1) parking position for a Code B aircraft (such as the Pilatus PC12).

In the longer term, as and when Code C aircraft operation is required, the terminal apron is proposed to be extended to the east and widened to allow aircraft parking clear of the realigned Taxiway Alpha.

6.1.7 FUEL FACILITY

The existing fuel station is planned to remain in its current position immediately west of the terminal apron accessed off Taxiway Alpha. Through stakeholder feedback the fuel supplier has indicated that a larger site (approximately 35 m x 35 m) would be ideal. Users have also indicated potential demand for a MoGas supply. Regular communication with the relevant fuel supplier should be maintained as to any future expansion of the compound and/or additional fuel types.

The existing fuel apron is frequented by the AAV helicopter AW 139 currently on a pavement concession, Council should consider pavement strengthening to continue to support AAV for the long term.

6.1.8 HARDSTAND AREA (EMERGENCY SERVICES)

A hardstand area for emergency services aircraft is planned on the east side of the existing drainage basin. The area will be accessed off Taxiway Alpha and is intended for emergency services aircraft stand-off parking on seasonal basis.

6.1.9 WIND DIRECTION INDICATORS AND GROUND SIGNALS

There are two existing wind direction indicators on the airport and also an Automatic Weather Information System (AWIS). A primary wind direction indicator illuminated with a signal circle is currently located on the south side of Taxiway Alpha directly opposite the terminal apron. An additional wind direction indicator is located on the south side of the runway intersection. The AWIS equipment is located north of the fuel bowsers.

Users have identified that a wind direction indicator visible prior to entering Taxiway Alpha would be valuable in the decision making of the active runway. Therefore, an additional wind direction indicator has been planned on the south side of Taxiway Alpha west of the Hardstand Area.

Both the primary illuminated wind direction indicator and signal circle and the secondary wind direction indicator are planned to remain in their current locations.

6.2 TERMINAL PRECINCT

The terminal building is planned to remain as it currently is for the short term. The existing terminal is capable of handling a service such as charter for aircraft operating up to a PC12, which is the aircraft

intended by Air Club Air. The facilities may need to be improved and should be reviewed in discussion with the charter operator/s.

Other than incremental improvements, terminal redevelopment is likely to be driven by the introduction of an RPT service. The nature of future terminal facilities will depend on the requirements for security screening and other matters which are driven by operating aircraft type, size and annual passenger traffic levels. These will need to be reviewed at the time.

The area identified for the terminal precinct is sufficient to accommodate a typical regional terminal facility for up to Q400 aircraft, should this be required.

Car parking is planned to the east of the terminal building. It is expected that this will be graded and sealed progressively to meet demand.

6.3 AAV PATIENT TRANSFER FACILITY

The AAV patient transfer facility is proposed to be located east of the terminal apron. This location accommodates privacy, land side and airside access with separation from the main terminal building and public activities. It also allows for the possible future expansion of the terminal, apron and car park to accommodate RPT services.

Road access to the transfer facility would be on the east side of the site via the main road to the terminal building and access to proposed hangars. AAV have provided the likely dimensions of a building structure that would support their operation (12 x 12 m). The adjacent apron is planned to accommodate a King Air 350 power in/power out parking.

6.4 DEPARTMENT OF ENVIRONMENT, LAND, WATER AND PLANNING

The DELWP Fire Base is planned to remain in its current location on the eastern boundary of the airport north of Runway 22 threshold. Any further expansion of this will need to take account of future Runway 04/22 runway strip and obstacle limitation surface constraints.

6.5 HANGAR LOTS

Additional hangar lots are provided for both Code A and Code B aircraft. The development and release of hangar sites will be dependent on demand and opportunities. However, an indicated staging is provided below.

6.5.1 STAGE 1 (SHORT TERM)

The existing northern hangar lots are planned to remain in their current form. Stakeholders expressed the need for Taxilane Charlie to be sealed and compacted to reduce the stones and therefore any potential damage to aircraft.

Eight (8) hangar lots (18m x 18m, to accommodate a 15m x 15m hangar each) can be provided in the immediate term to the east of the AAV Transfer Facility. Road access will be provided to the western row of hangar lots south from the existing main road to the terminal precinct. The eastern row of hangars will be accessed via extending the existing internal north south road. Taxilane Delta is planned as the airside access via Taxiway Alpha as shown in **Figure E2** at **Appendix A**.

Additional larger Code B hangar lots are provided south of the existing apron area via Taxilane Charlie.

6.5.2 STAGE 2 (MEDIUM TERM)

Stage 2 hangar development provides for an additional 13 Code B hangar lots (40m x 50m) on the south side of Taxiway Alpha opposite the Stage 1 development.

Three new Code B taxiways are planned to provide access to the hangar lots. Taxiway Charlie is planned to extend south from Taxilane Charlie to access the north south row of hangars. Taxiway Foxtrot is planned to access the southern row of hangars. Taxiway Golf is planned as a Code B taxiway with Code C separation parallel to Runway 13/31.

The north south airport road will be extended for landside access. Refer **Figure E3** at **Appendix A**.

Taxiway Alpha is planned to be realigned to allow for Code C clearances. The realignment of Taxiway Alpha will provide for an addition four (4) 18m x 18m Code A hangar lots on the north side of the taxiway.

6.5.3 STAGE 3 (LONG TERM)

Referring **Figure E3** at **Appendix A**, Stage 3 provides for an additional 7 Code B hangar lots (40m x 50m). The addition of hangar lots will require the construction of two additional taxiways. Extending Taxiway Charlie and a new Taxiway Hotel to access the southern row of hangars is planned for the additional hangars.

6.6 NON-AVIATION USES

6.6.1 EAST GIPPSLAND FIELD DAYS

Stakeholder feedback indicated that East Gippsland Field Days (EGFD) would like to assume the WWII Hangar One into its grounds permanently. The temporary use of the hangar is cumbersome and EGFD would benefit from the space all year round. Stakeholder discussions also indicated that EGFD is not intending to expand but to better utilise the existing facilities.

It is proposed that the EGFD grounds are delineated by high security fencing with no airside access and the WWII Hangar One is made a landside building subject to relocation of existing tenants and appropriate future tenancy agreement.

6.6.2 ARTS AND HERITAGE PRECINCT

Stakeholder feedback indicated possible expansion of the Bairnsdale Production Line Theatre Company and an interest in emphasising the historical heritage of the WWII buildings on site.

The existing Production Line company leases two buildings at the north end of the airport. It is planned to realign the airside boundary fence to clearly delineate vehicle and airside access. Incorporating the WWII hangars into the area provides for the opportunity to create a historical and arts precinct attracting visitors to the area.

6.6.3 SOUTHERN FARMING SYSTEMS

The extension of Runway 04/22 will require a portion of the Southern Farming Systems lease area to the south. The future upgrade to Code 3C standards will also widen the runway strip and the airside boundary to each side of the runway.

It may be possible to make additional land available for use by for Southern Farming Systems in areas:

- South of the runway intersection; and/or
- North of the airport entrance road; and/or
- The most northern section of the airport, north of the Arts and Heritage Precinct.

Refer **Figure E1** at **Appendix A**.

6.6.4 BAIRNSDALE DRAG WAY

Under the new Part 139 MOS, Runway 04/22 with an instrument non-precision approach will be required to be centrally placed within a 280 metre wide runway strip. Currently, the runway strip is 90 metres wide.

The upgrade of the runway under the new standards will require the Bairnsdale Drag Way to be relocated in order for Runway 04/22 to comply with the new standards as a Code 3C non-precision instrument runway.

7. AIRPORT PRELIMINARY BUSINESS PLAN

This section sets out a high level development plan with indicative budget costs and a review of possible revenue.

7.1 DEVELOPMENT STAGING

Development should occur in logical sequential steps to achieve the Master Plan vision while accommodating immediate needs. Timing of developments is generally linked to demand triggers in conjunction with funding availability.

Development staging for Bairnsdale Airport has been identified in three stages:

- Short term (1 – 2 years);
- Medium term (3 – 5 years); and
- Long term (5 – 10 years)

The staging allows for the immediate accommodation of needs followed by subsequent staging to facilitate growth. **Table 5** summarises the staging elements and provides high level indicative costs. These items are presented in an approximate order of priority within each stage with a breakdown of costs within each stage in the **Indicative Costs Table** in **Appendix B.**

7.1.1 STAGE 1 DEVELOPMENT (SHORT TERM 1 – 2 YEARS)

Ground works to facilitate the AAV transfer facility and road and taxiway access will provide AAV with a private accessible station for the transfer of patients is recommended at the earliest opportunity.

Taxilane access and bulk earthworks and building platforms will provide for additional Code A hangar sites for development to accommodate the immediate demand for lease sites as well as the relocation of several leaseholders and the existing leaseholders from WWII hangar #1 that will be assumed into the East Gippsland Field Days precinct.

The installation of a new illuminated wind indicator will provide visibility from the existing northern hangar area prior to entering Taxiway Alpha.

The shaping and grading of the terminal precinct car parking area with sealed pavement as an option and fencing will improve and formalise the terminal area for passengers and visitors to the airport now and into the future.

7.1.2 STAGE 2 DEVELOPMENT (3 – 5 YEARS)

Runway 04/22 bulk earthworks, pavement, lighting and fencing to a Code 3C instrument non-precision runway.

Bulk earthworks and pavement to upgrade Taxiway Alpha and the terminal apron to Code C.

Taxilane and road access and bulk earthworks and building platforms will provide for an additional 4 Code A hangar sites for development.

Bulk earthworks and building platform will provide for 13 – 14 Code B hangar sites.

Extend the taxiway and roadway to access the Code B hangar sites.

Bulk earthworks and pavement for Code C Taxiway Golf with the installation of Taxiway edge lights. The terminal apron strengthened and additional pavement to upgrade to a Code C.

7.1.3 STAGE 3 DEVELOPMENT (5 – 10 YEARS)

The addition of 7 Code B hangar lost bulk earth works and building platform with the extension of road access and taxiway access.

Table 5: Development Staging and Indicative Cost

Development Item		Indicative Cost ($)
Stage 1: Short Term (1 – 2 Years)		
1A	AAV Transfer Facility (excludes building), Apron and Road Access	0.5 – 0.7 million
1B	8 Code A Hangar Lots and associated taxiway and road access	0.9 – 1.1 million
	2 Code B Hangar Lots and associated taxiway and road access	0.8 – 1 million
	Illuminated Wind Direction Indicator	42,000 – 56,000
1C	Terminal Precinct Car Parking Area	0.4 – 0.5 million
Stage 2: Medium Term (3 – 5 Years)		
2A	Runway 04/22 Code C	12 – 17 million
	Taxiway A and Terminal Apron Code C	0.7 - 1 million
2B	4 Code A Hangar Lots and associated taxiway and road access extended	0.5 – 0.7 million
2C	14 Code B Hangar Lots and associated taxiways and road access	3.8 – 5.1 million
2D	Taxiway G Code C and Taxiway Edge Lighting	2 – 3 million
Stage 3: Long Term (5 – 10 Years)		
3A	Terminal Apron Code C and Apron Edge Lighting	0.5 – 0.6 million
3B	7 Code B Hangar Lots and Code B Taxiway and Road Access	2.8 – 3.7 million

7.2 REVENUE OPPORTUNITIES

There are a variety of opportunities to increase revenue at Bairnsdale Airport to assist in covering the operational and capital costs associated with airport operations and development. Some common forms of increasing revenue are outlined below.

Hangar Development

Future sites could be made available for leasing on a short, medium or long-term lease. Typically a short-term lease is approximately 20 years with medium and long term being 30 – 40 years respectively. Longer leases are often offered to commercial operations.

Generally lease fees are based on the total land area occupied which is usually larger than the permissible building area covering the area between the taxiway clearance the hangar frontage which is not available for other commercial use.

Lease sites should cover the cost of improvements necessary to make these sites suitable for construction of hangars including any common access (airside and landside).

Developing hangar sites should be subject to a cost benefit analysis incorporated some expression of interest to gauge the demand and therefore the uptake of lease sites upon completion.

There is an opportunity to incorporate an element of cost recovery for operational usage into the lease agreement as an alternative to landing fees for tenants.

Access Charge

Access charges are fees for access to the airport and conduct of business. At Bairnsdale Airport this may be for the operations that conduct business from the airport but do not hold a lease. In some cases all users can be liable for this charge or only regular users such as flight schools and training/recreational organisations.

Access charges could be on monthly, six monthly or yearly depending on the operation being conducted. The charges should be set to enable cost recovery whilst within the competitive market so as not to deter action/sales.

It can be difficult to track and establish an agreement with operators that are using the airport to conduct business unless they are very regular. Systems such as Avdata can be used to track who is coming and going on the airport regularly.

Knowing who the users are and entering agreements with the operators can benefit the whole of airport community through increased revenue for the airport and a chain of communication for the operators.

Aircraft Parking Charges

Aircraft parking charges are intended to cover the cost of common-user aircraft parking aprons and can work with a ticketing system, airport personnel monitoring or an on-site honestly system. Charges can be on a MTOW basis, typically for commercial aircraft, or flat half day or full day rates.

However, all regimes require airport personnel to monitor or a system to be put in place to capture the aircraft parking. At airports where landing fees are in place, this fee would typically incorporate a period of free parking. With the implementation of additional tie-down points and the fly ins that Bairnsdale Airport hosts parking charges may be an opportunity to assist with the costs of additional tie down points and any costs associated with facilitating a fly in.

Landing Charges

Landing fees are imposed for the use of the runway and are intended to cover the cost of runway and supporting taxiway infrastructure. Aircraft landing fees are generally charged per tonne of maximum certificated take-off weight as indicated in the certificate of airworthiness for each aircraft. A sliding scale of charges is common, with higher rates per tonne for heavier aircraft, which reflect the disproportionate effect of aircraft weight on pavement strength requirements. Landing fees are paid by passenger airlines, charter, freight and non-commercial aircraft.

To capture aircraft landing there must be a monitoring system available. These can include audio and visual options that either Council collects transcribes and bills or there are services that can be contracted to do so such as Avdata and Gentrack.

Charging can produce and large number of relatively small bills and as such the time and effort to collect if people don't pay is time consuming and not always productive. In addition with a large number of recreational aircraft, they can be difficult to capture as they do not operate on the same register and Australian registered aircraft and as such can be difficult to track and bill.

The advantages of contracting the monitoring and billing out are its timely, equipment is costly and transcription, billing and following up on overdue bills is laborious and time consuming. However, the fees and charges collected need to be beneficial to Council.

In addition, using a contractor to monitor and record provides Council with records of who is coming and going from the airport.

Licences

Licences are often associated with exclusive use of a location or facility over a period of time. Allocated apron parking positions, or external areas adjacent the hangar lease sites, or use of facilities such as the terminal building to conduct business are often subject to licencing arrangements rather than more formal and onerous lease agreement.

Concessions

Fuel suppliers are a good example of concessions, where the fuel supplier includes a concession charge in the sale price which it pays to the airport operator for the right to offer the service to the airport's customers.

Concessions may also be applied to events or activities particularly when the airport must block off areas, there is an inconvenience to tenants and/or increase security for the time of the event. An example may be the East Gippsland Field Days when they hold their yearly event at the airport such a charge could be added to the sale price of the ticket.

7.3 FUNDING OPPORTUNITIES

There are a variety of funding opportunities at both state and federal government levels that respond regional airports in general and in times of need. An overview of relevant funds is listed below:

Bushfire Recovery Package

Commonwealth National Bushfire Recovery Agency

There are a variety of programs listed within this program to support Local Government and fire-fighting aircraft. The National Bushfire Recovery Agency can be contacted on contact@bushfirerecovery.gov.au or by phone at +61 2 6228 6300

Regional Airports Program

Department of Infrastructure, Transport, Regional Development and Communications

The Regional Airports Program provides regional airports or aerodromes with grants to enhance aviation safety and accessibility. It will support critical air infrastructure that will:

- Improve the safety of aircraft, operators and passengers using regional airports or aerodromes
- Facilitate improved delivery of essential goods and services such as food supplies, health care and passenger air services
- Improve the connectivity of Australia's regions to domestic and global market opportunities
- Meet the operational requirement of aeromedical and other emergency services in the region

There is a total of $45 million available in the rants are available from $20,000 to $5 million for owners and operations of airport or aerodromes in regional areas of Australia. Further information can be found at https://www.business.gov.au/rap .

While the most recent round closed 12 December 2019 the Department has other rounds will be published on business.gov.au and GrantConnect.at https://www.grants.gov.au/ .

Regional Infrastructure Fund

Regional Development Victoria

The Regional Infrastructure Fund seeks to assist the growth of rural Victoria by providing grants for infrastructure projects that have the potential to stimulate economic activity in Regional Victoria.

The 2019/20 financial year funding available was capped at $500,000 per project with maximum funding ratios for a large rural council up to RDV $2 : $1 other and small rural council or alpine resort up to RDV $3 : $1 other.

Funds details can be found at https://www.rdv.vic.gov.au/grants-and-programs/regional-infrastructure-fund .

7.4 NEXT STEPS

Following adoption of the Bairnsdale Airport Master Plan 2019 the next steps for consideration are as follows:

- Engage with Dragway Inc. and Southern Farming Systems to discuss a plan to relocate the activities and reclaim the aviation land in preparation for the extension and upgrade of Runway 04/22. This process should include a more detailed analysis of the aviation impact on the respective sites to negotiate a mutually agreeable solution.
- Work with Air Ambulance Victoria to establish a partnership for the delivery of the Patient Transfer Facility. This will include detailed scoping of the works to be included in this project.
- Initiate a funding application process, which may include a partnership with AAV, to realise the Patient Transfer Facility.
- Undertake a business case for the Stage 1 Code A Hangar Lots including expressions of interest for the sites to determine the timing of release of these lots. This business plan should include detailed costing, a cost benefit analysis and a review of lease contracts to provide a competitive arrangement attracting operators to the airport.

- Investigate potential funding sources for the construction of Runway 04/22. Undertake engineering investigation (i.e. ground conditions, survey, environment) to enable detailed civil design and cost estimate for development of Runway 04/22.

8. AIRPORT SAFEGUARDING

8.1 THE NEED FOR SAFEGUARDING

Adequate protection of the basic capability to undertake aircraft operations in accordance with accepted safety standards and regulatory requirements, and in efficient and economic manner, is imperative to the future realisation of aeronautical opportunities at Bairnsdale Airport. Safeguarding is particularly important where the capability for future upgrades is to be preserved, for example to accommodate larger aircraft. Development on and around Bairnsdale Airport will require adequate respect for safeguarding in order to develop the vision and objectives of the Master Plan and preserve possible future opportunities.

Airport safeguarding includes a number of elements that will be required throughout the planning and development processes. The various safeguarding elements will be triggered by different activities and aircraft operations.

8.2 NATIONAL AIRPORTS SAFEGUARDING FRAMEWORK

The National Airports Safeguarding Framework (NASF) is a national land use planning framework that aims to:

- Improve community amenity by minimising aircraft noise-sensitive developments near airports including through the use of additional noise metrics and improved noise-disclosure mechanisms; and
- Improve safety outcomes by ensuring aviation safety requirements are recognised in land use planning decisions through guidelines being adopted by jurisdictions on various safety-related issues.

The NASF was developed by the National Airports Safeguarding Advisory Group (NASAG), comprising of Commonwealth, State and Territory Government planning and transport officials, the Australian Government Department of Defence, the Civil Aviation Safety Authority (CASA), Airservices Australia and the Australian Local Government Association (ALGA).

NASF currently consists of a set of seven principles and nine guidelines. The full NASF principles and guidelines can be found on the Department of Infrastructure and Regional Development's website at: *www.infrastructure.gov.au/aviation/environmental/airport_safeguarding/nasf* .

The NASF principles are as follows, and each guideline is described in the following subsections.

- **Principle 1:** The safety, efficiency and operational integrity of airports should be protected by all governments, recognising their economic, defence and social significance
- **Principle 2:** Airports, governments and local communities should share responsibility to ensure that airport planning is integrated with local and regional planning
- **Principle 3:** Governments at all levels should align land use planning and building requirements in the vicinity of airports
- **Principle 4**: Land use planning processes should balance and protect both airport/aviation operations and community safety and amenity expectations
- **Principle 5**: Governments will protect operational airspace around airports in the interests of both aviation and community safety
- **Principle 6:** Strategic and statutory planning frameworks should address aircraft noise by applying a comprehensive suite of noise measures
- **Principle 7:** Airports should work with governments to provide comprehensive and understandable information to local communities on their operations concerning noise impacts and airspace requirements.

8.2.1 GUIDELINE A

Measures for Managing Impacts of Aircraft Noise

NASF Guideline A can be used in the assessment of new development applications for noise sensitive uses. While the Australian Noise Exposure Forecast (ANEF) system is recognised by a number of jurisdictions in land use planning decisions, the 20 and 25 ANEF zones do not capture all high noise affected areas around an airport. In addition, Australian Standard AS2021-2015 recognises that the ANEF contours are not necessarily an indicator of the full spread of noise impacts, particularly for residents newly exposed to aircraft noise.

Guideline A is the Government's recognition of the need to consider a complementary suite of noise measures in conjunction with the ANEF system to better inform strategic planning and to provide more comprehensive and understandable information on aircraft noise for communities.

No noise contours are provided as a part of this Master Plan however, prior to any rezoning of surrounding land, Guideline line A should be taken into account.

8.2.2 GUIDELINE B

Managing the Risk of Building Generated Windshear and Turbulence at Airports

The purpose of this guideline is to assist land use planners and airport operators in their planning and development processes to reduce the risk of building generated windshear and turbulence at airports near runways.

Applicability of this Guideline is initially determined by the location of the building within an 'assessment trigger area' around the runway ends, that is:

- 1200 metres or closer perpendicular from the runway centreline (or extended runway centreline);
- 900 metres or closer in front of runway threshold (towards the landside of the airport); and
- 500 metres or closer from the runway threshold along the runway.

The guideline recommends that all developments within the assessment trigger areas which will infringe a 1:35 sloping surface from the runway centreline should be subject to further assessment.

Positioning of all developments on airport will need to be evaluated on a case by case basis. Subject to confirmation through such evaluation that no adverse impact on aircraft operations is predicted, then buildings may be located closer to the runways and within the 1:35 surface.

Figure H at **Appendix A** illustrates the 1:35 surface. Buildings that are proposed to infringe this surface may require further assessment in accordance with Guideline B to confirm that no adverse impact on aircraft operations is predicted.

8.2.3 GUIDELINE C

Managing the Risk of Wildlife Strikes in the Vicinity of Airports

The purpose of Guideline C is to inform the land use planning decisions and the way in which existing land use is managed in the vicinity of airports with respect to the attraction of wildlife, particularly birds. A table is included in Attachment 1 which indicates wildlife attraction risk and associated actions for developments within buffer zones around airports of 3, 8 and 13 kilometres radius.

Council should consider Guideline C in its planning decisions with respect to land uses and developments within 13 kilometres of the Airport. Refer **Figure J** at **Appendix A**.

8.2.4 GUIDELINE D

Managing the Risk to Aviation Safety of Wind Turbine Installations

This guideline provides general information and advice in relation to wind farms and turbines and their hazards to aviation. Proponents of such installations should take account of Guideline D in undertaking assessments of the impacts of the proposals, including on aviation.

Council should be aware of the guideline and it may assist Council in evaluating and commenting on any wind farm proposals.

8.2.5 GUIDELINE E

Managing the Risk of Distraction to Pilots from Lighting in the Vicinity of Airports

Guideline E provides guidance on the risk of distractions to pilots of aircraft from lighting and light fixtures near airports. The CASA *Manual of Standards part 139 Aerodromes* Section 9.21: *Lighting in the Vicinity of Aerodromes* sets out the restrictions and provides advice to lighting suppliers on the general requirements, information and correspondence avenues.

Advice for the guidance of designers and installation contractors is provided for situations where lights are to be installed within a 6 kilometre radius of the airport. Lights within this area fall into a category most likely to be subject to the provisions of regulation 94 of CAR 1988.

The primary area is divided into four light control zones; A, B, C and D. These zones reflect the degree of interference ground lights can cause pilots as they approach. Lighting associated with any developments should therefore meet the maximum intensity of light sources measured at 3 degrees above the horizontal associated with each Zone as follows:

- Zone A - 0 cd;
- Zone B – 50 cd;
- Zone C – 150 cd; and
- Zone D – 450 cd.

Council should consider Guideline E in relation to any proposed lighting installations (for example, associated with sports fields, industrial facilities and similar) within 6 kilometres of the Airport. Refer **Figure G** at **Appendix A**.

8.2.6 GUIDELINE F

Managing the Risk of Intrusions into the Protected Airspace of Airports

Guideline F is designed to address the issue of intrusions into the operational airspace of airports by tall structures, such as buildings and cranes in the vicinity of airports.

The safety, efficiency and regularity of aircraft operations require airspace to be largely free of obstacles which may make it unsuitable for the conduct of visual and instrument flights.

At Bairnsdale Airport the Obstacle Limitation Surfaces (OLS) are currently provided based on an instrument non-precision Code 1 Runway 04/22 at 1,100 m long. To protect for the operations which may be associated with a Code 3 runway to accommodate larger aircraft, the OLS should be updated to reflect the possible 1,600 metre long Runway 04/22. Refer **Figure F** at **Appendix A**.

The OLS for an airport describe the airspace boundaries for flight in proximity to an airport which should be kept free of obstacles that may endanger aircraft operations in visual operations or during the visual stages of an instrument flight. The OLS components are defined in the International Civil Aviation Organization (ICAO) Annex 14 and in Chapter 7 of the CASA Part 139 (Aerodromes) Manual of Standards 2019.

Subject to aeronautical assessment, an obstacle may be permitted to penetrate the OLS without placing restrictions on the allowable operations, but will normally require it to be marked and/or lit to make it conspicuous to pilots. CASA may also impose operational limitations on aerodrome users in the presence of obstacles. To avoid any undesirable limitations on operations, it is recommended to ensure that obstacles are not permitted to penetrate the approach or departure areas.

The Guideline also addresses activities that could cause air turbulence that could affect the normal flight of aircraft operating in the prescribed airspace and/or emissions of steam, other gas, smoke, dust or other particulate matter that could affect the prescribed airspace in accordance with Visual Flight Rules (VFR).

Bairnsdale Airport has a published instrument approach to Runway 22. Council should work with Airservices Australia to ensure Council has the information needed for monitoring obstacles within the associated instrument approach procedure protection areas to allow it to fulfil its obligations under the relevant regulations.

8.2.7 GUIDELINE G

Protecting Aviation Facilities – Communication, Navigation and Surveillance (CNS)

The purpose of Guideline G is to provide a consistent approach to land use planning protection of CNS facilities. Guideline G assists land use planning decision makers with guidance for assessing development proposals in Building Restricted Areas (BRA). Attachment 3 to the Guideline provides the BRAs for aviation facilities.

Bairnsdale Airport does not have any of the aviation facilities which are the subject of Guideline G.

8.2.8 GUIDELINE H

Protecting Strategically Important Helicopter Landing Sites (HLS)

Guideline H provides guidance on the ongoing operations, protection of flight paths and areas for off-airport HLS. As such it is not applicable to on-airport facilities. However, on-airport helicopter facilities should be planned and designed in accordance with the guidance set out in CAAP 92-2(2) *Guidelines for the establishment of on-shore helicopter landing sites*.

8.2.9 GUIDELINE I

Managing the Risk in Public Safety Areas at the Ends of Runways

Guideline I provides guidance on approaches for the application of a Public Safety Area (PSA) planning framework in Australian jurisdictions. The Guideline is intended to ensure there is no increase in risk from new development and to assist land-use planners to better consider public safety when assessing development proposals, rezoning requests and when developing strategic land use plans.

A PSA is a designated area of land at the end of an airport runway within which development may be restricted in order to control the number of people on the ground around runway ends. The size and shape of a PSA typically depend on the statistical chance of an accident occurring at a particular location. The risk is related to the number and type of aircraft movements and the distance from the critical take-off and landing points. PSAs are based on the landing threshold for each end of the runway and in most cases become narrower with increasing distance before the threshold.

Guideline I provides two examples of most relevance to Australia (the UK and Queensland approaches) to developing PSA extents:

- The UK model is the most formalised approach to defining a PSA and has been applied at a number of international and Australian airports; and
- The Queensland model is a modified version of the policy and research conducted in the UK.

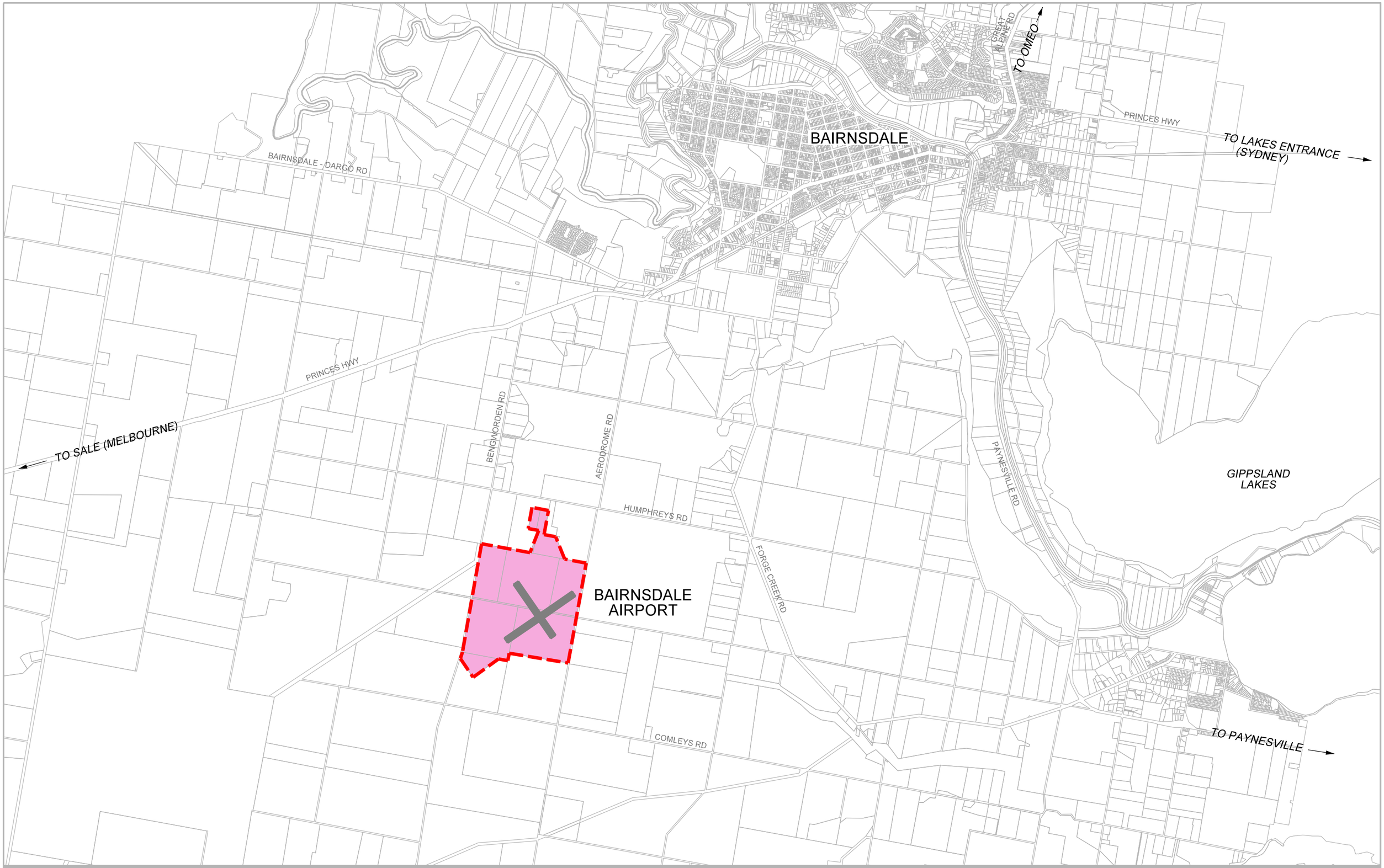
The Queensland model may be more appropriate at a regional airport such as Bairnsdale. Under the Queensland model, an airport's main runway requires a PSA if the runway meets the following criteria:

- RPT jet aircraft services are provided, or
- Greater than 10 000 aircraft movements occur per year (excluding light aircraft movements).

As neither of these criteria are likely to be exceeded at Bairnsdale, the requirement for Public Safety Areas is not triggered under this Master Plan. Nevertheless, Council should be cognisant that the areas around the ends of runway (generally within 1 kilometre of the runway end and within 150 metres of the centreline) are subject to greater risk from aircraft accidents than other areas. Development within these areas should be sensitive to this situation. NASF Guideline I provides more information.

APPENDIX A

Figures



REHBEIN Airport Consulting

BAIRNSDALE AIRPORT MASTER PLAN 2019

Locality Plan

NORTH

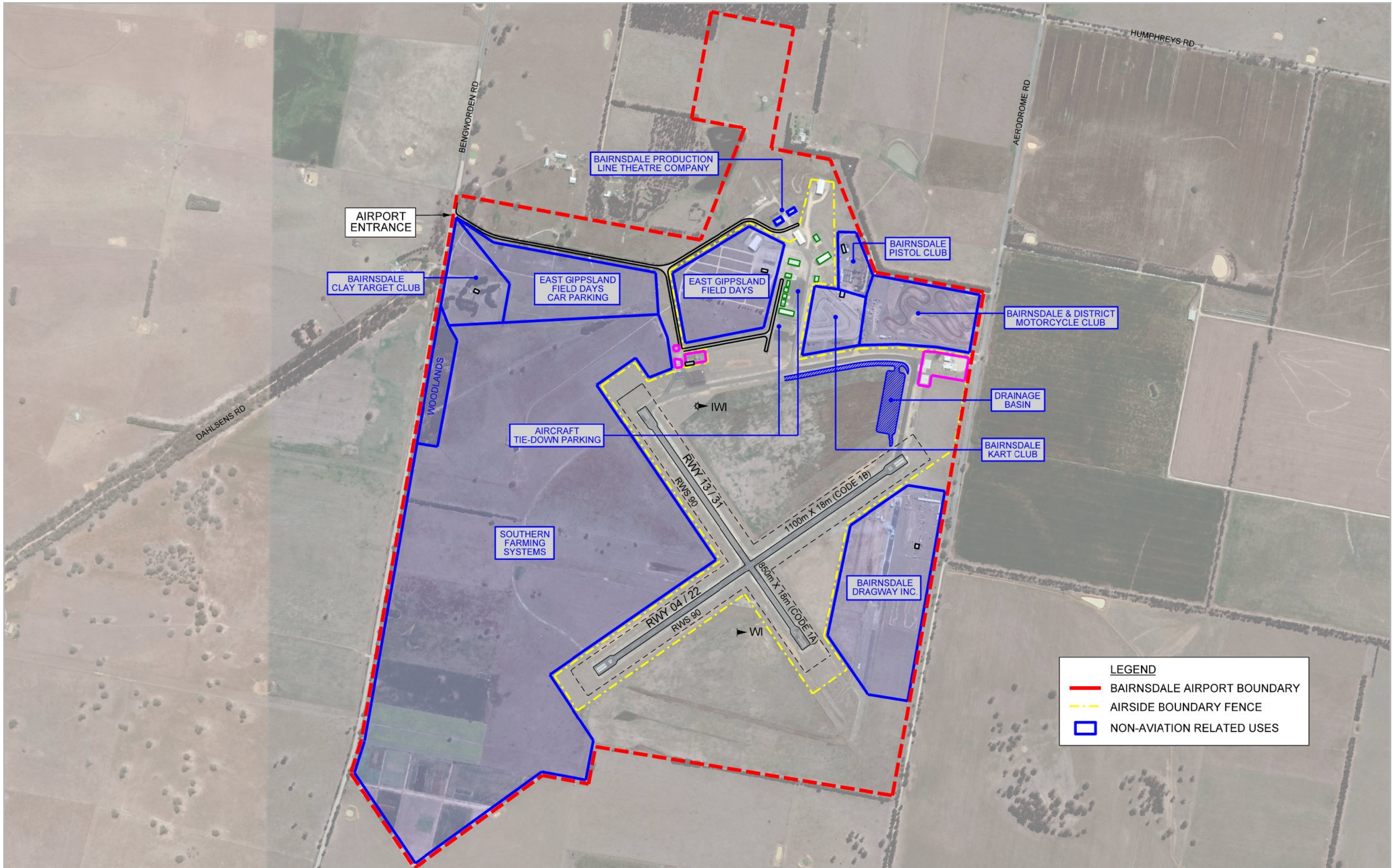
0 0.5 1.5 2.5km

1:50,000 @ A3

30.06.2020 REV 2

FIGURE A

M19127



REHBEIN Airport Consulting

BAIRNSDALE AIRPORT MASTER PLAN 2019

Existing Airport Layout

NORTH

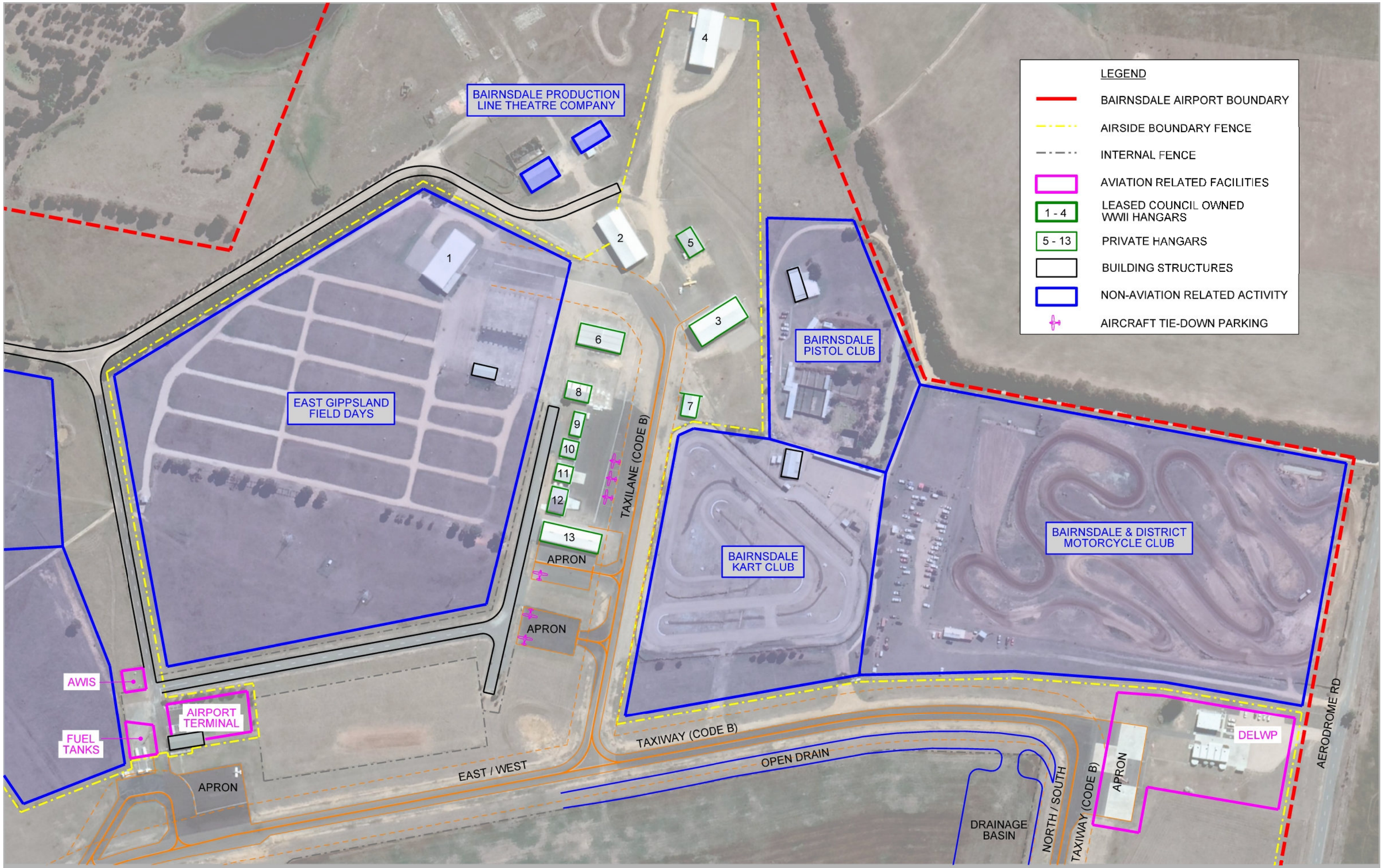
0 100 300 500m

1:10,000 @ A3

30.06.2020 REV 3

FIGURE B

M19127



REHBEIN Airport Consulting

BAIRNSDALE AIRPORT MASTER PLAN 2019

Existing Terminal & GA Facilities

NORTH

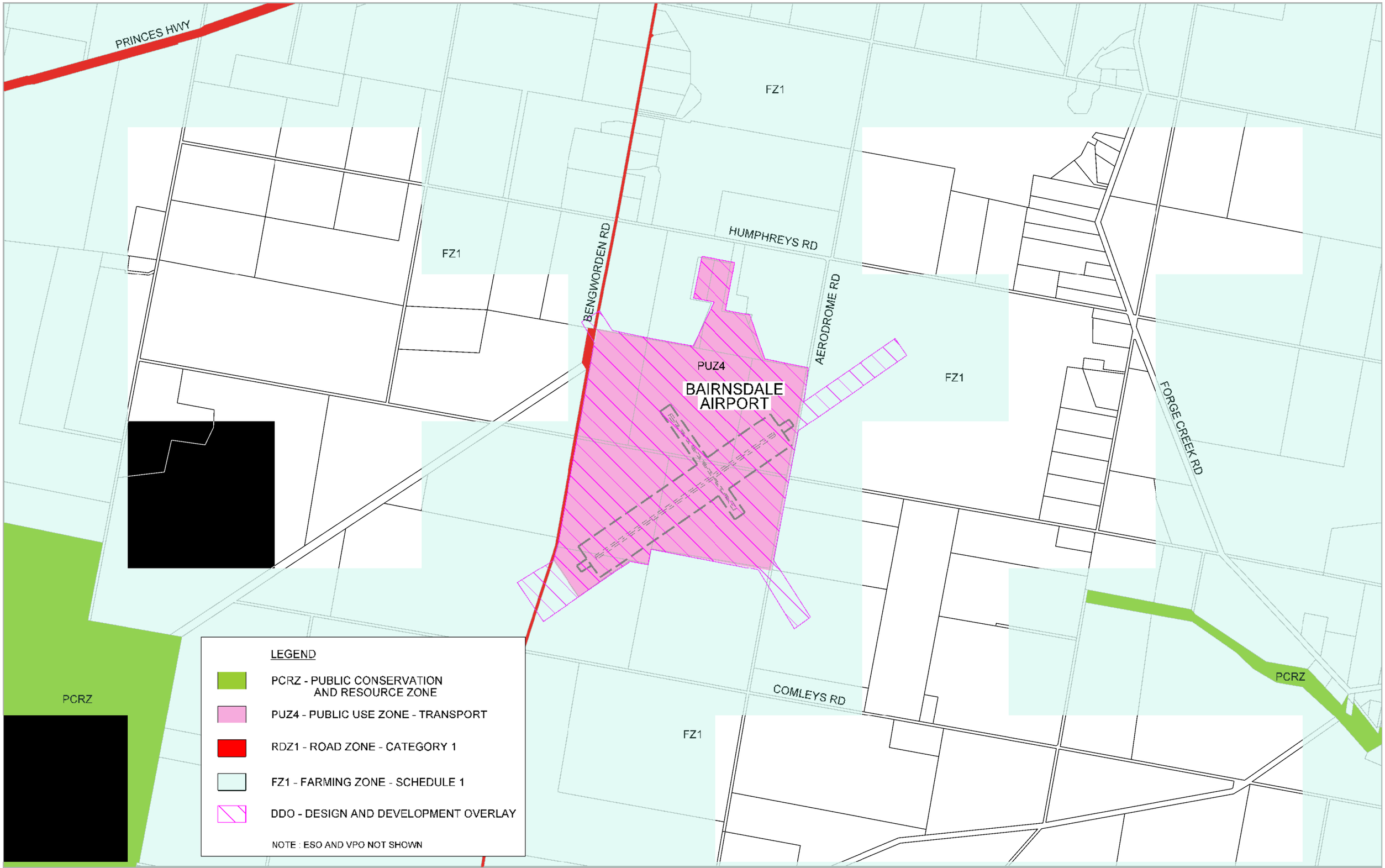
0 25 75 125m

1:2,500 @ A3

30.06.2020 REV 3

FIGURE C

M19127



REHBEIN Airport Consulting

BAIRNSDALE AIRPORT MASTER PLAN 2019

Land Use Plan

NORTH

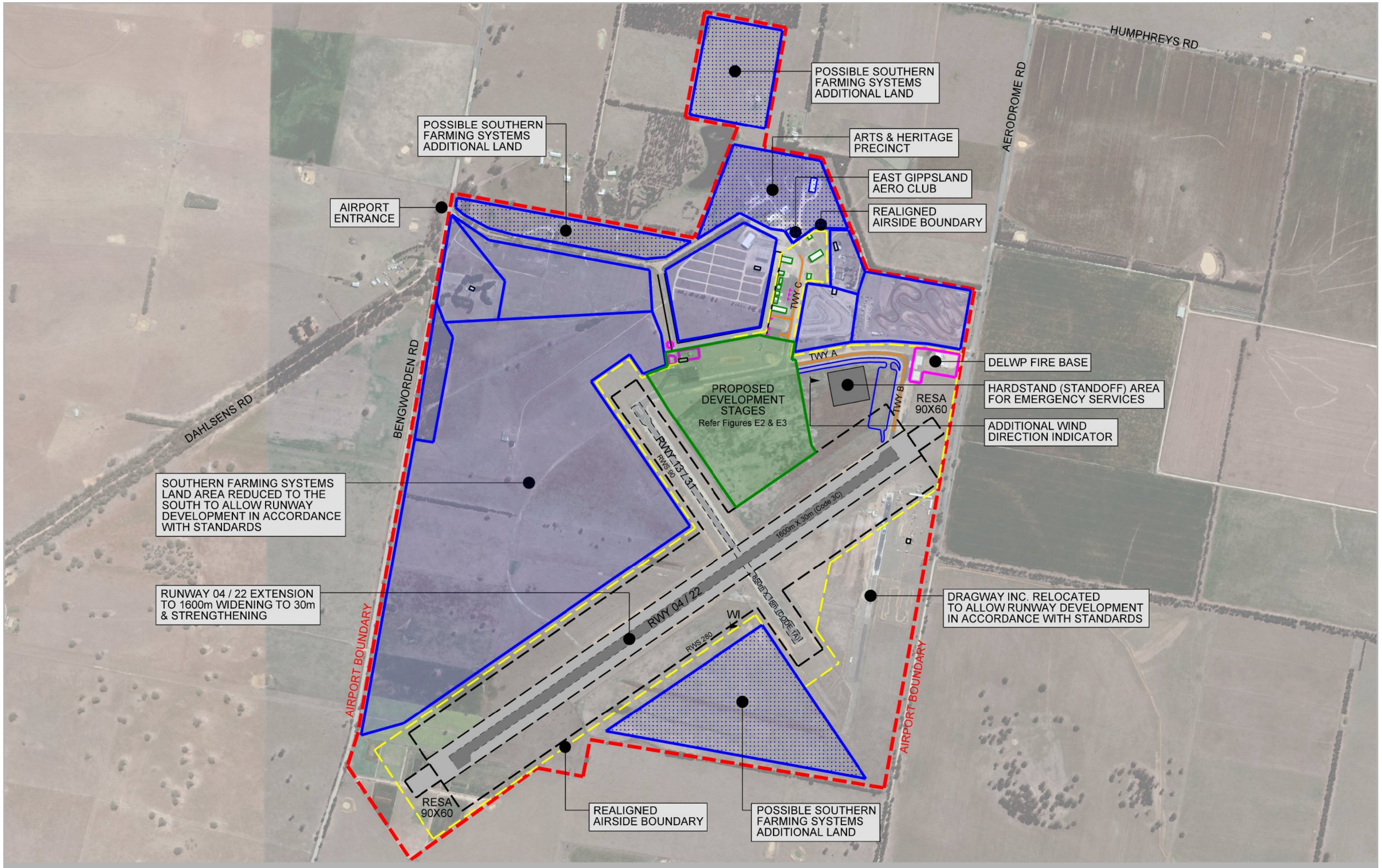
0 0.25 0.75 1.25km

1:25,000 @ A3

30.06.2020 REV 1

FIGURE D

M19127



REHBEIN Airport Consulting

BAIRNSDALE AIRPORT MASTER PLAN 2019

Overall Development Plan

NORTH

0 100 300 500m

1:10,000 @ A3

30.06.2020 REV 3

FIGURE E1 M19127

EXISTING AIRCRAFT TIE-DOWN PARKING

FUTURE AIRCRAFT TIE-DOWN PARKING

8 HANGAR LEASE LOTS (18m X 18m)

EXISTING APRON

TWY C

FUEL COMPOUND RESERVE

TERMINAL PRECINCT

CAR PARK

TAXILANE (CODE A)

AAV TRANSFER FACILITY

KA350

SF340B

PC12

TWY A

2 HANGAR LEASE LOTS (CODE B)

ROAD EXTENSION TO ACCESS NEW HANGAR LOTS

ADDITIONAL ILLUMINATED WIND INDICATOR

EXISTING APRON AND FUEL ACCESS MAINTAINED

EXISTING ILLUMINATED WIND INDICATOR

REHBEIN Airport Consulting

BAIRNSDALE AIRPORT MASTER PLAN 2019

Terminal & Hangar Development - Stage 1

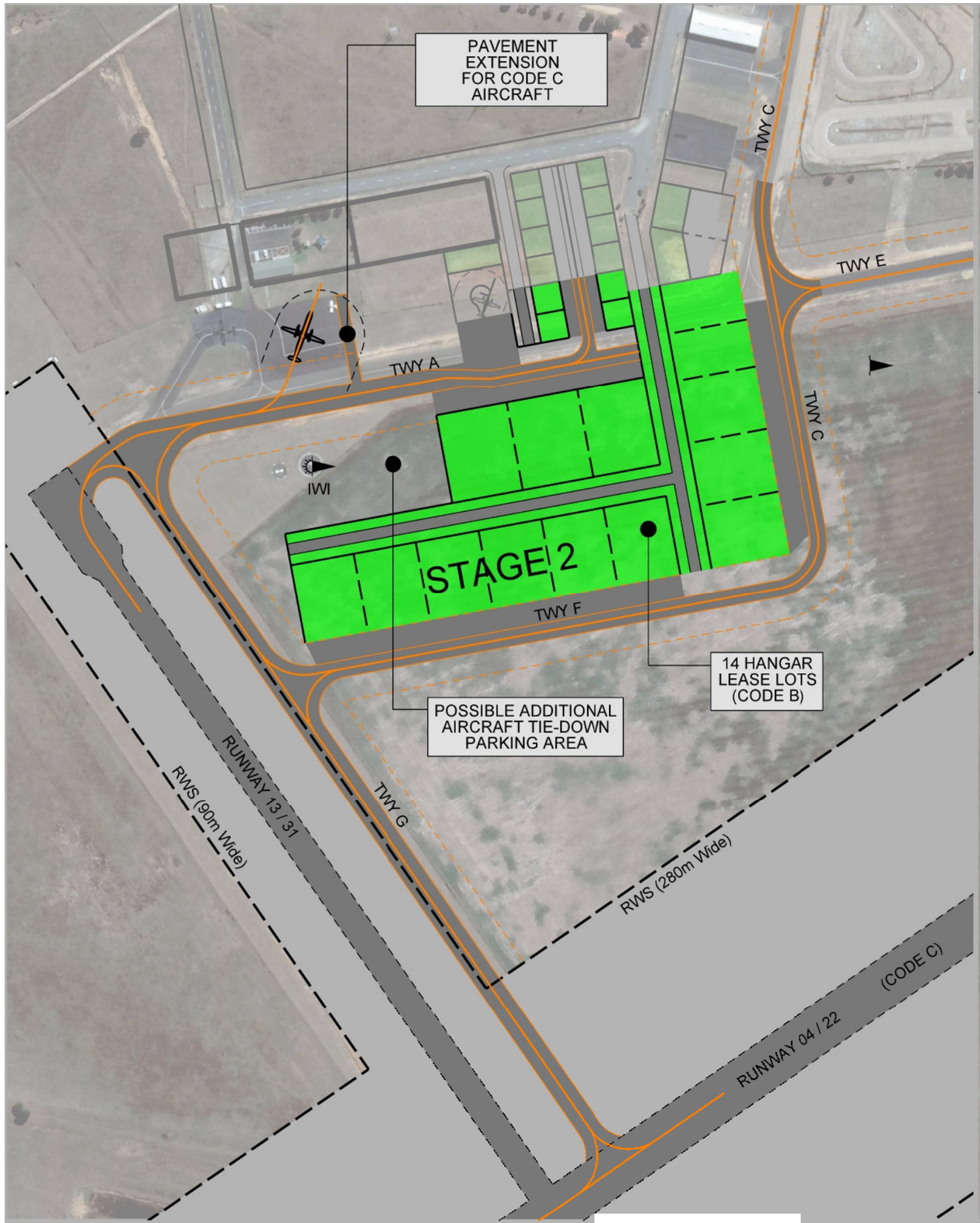
NORTH

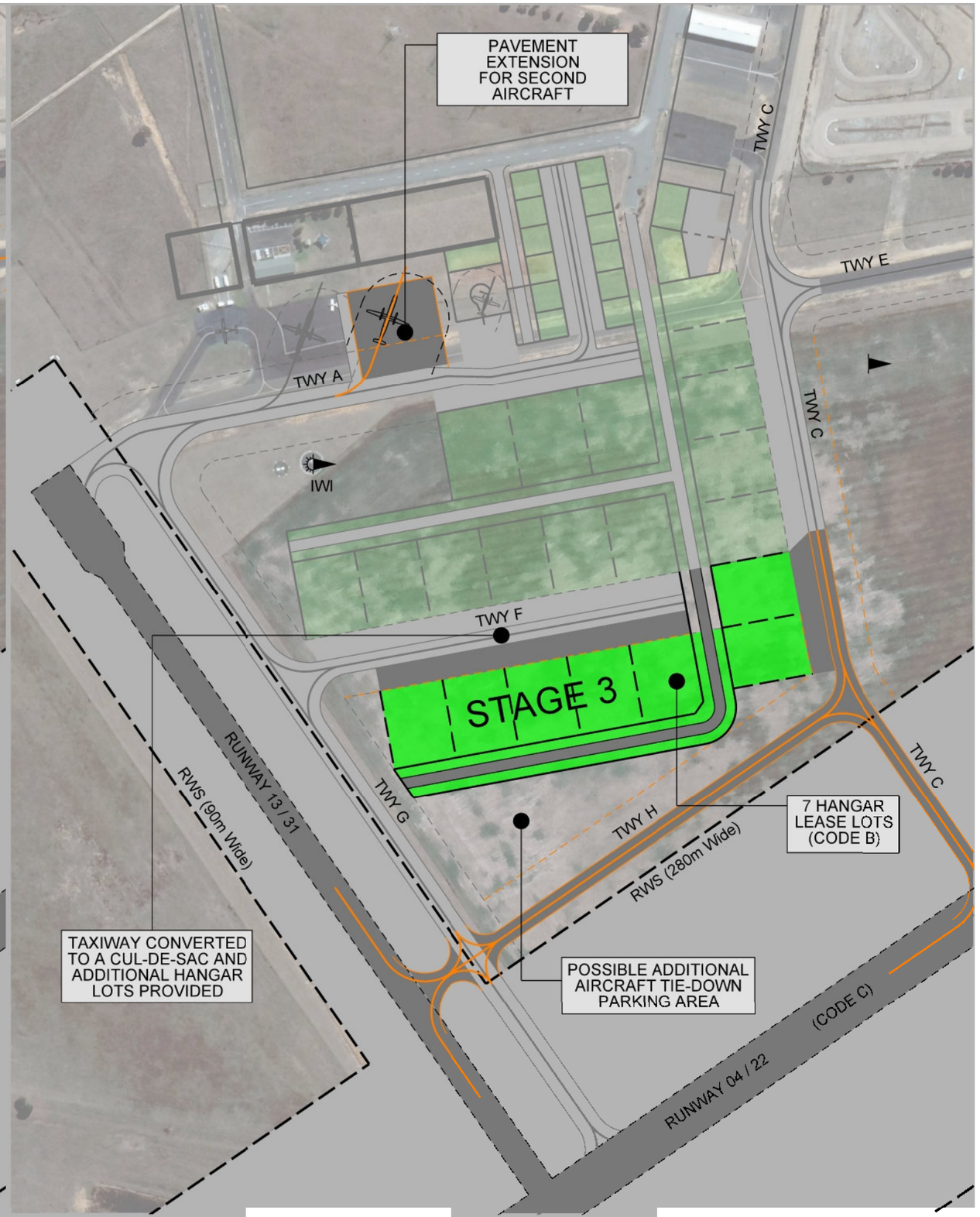
0 12.5 37.5 62.5m

1:1,250 @ A3

30.06.2020 REV 2

FIGURE E2 M19127





REHBEIN Airport Consulting

BAIRNSDALE AIRPORT MASTER PLAN 2019

Terminal & Hangar Development - Stage 2 & 3

NORTH

0 30 90 150m

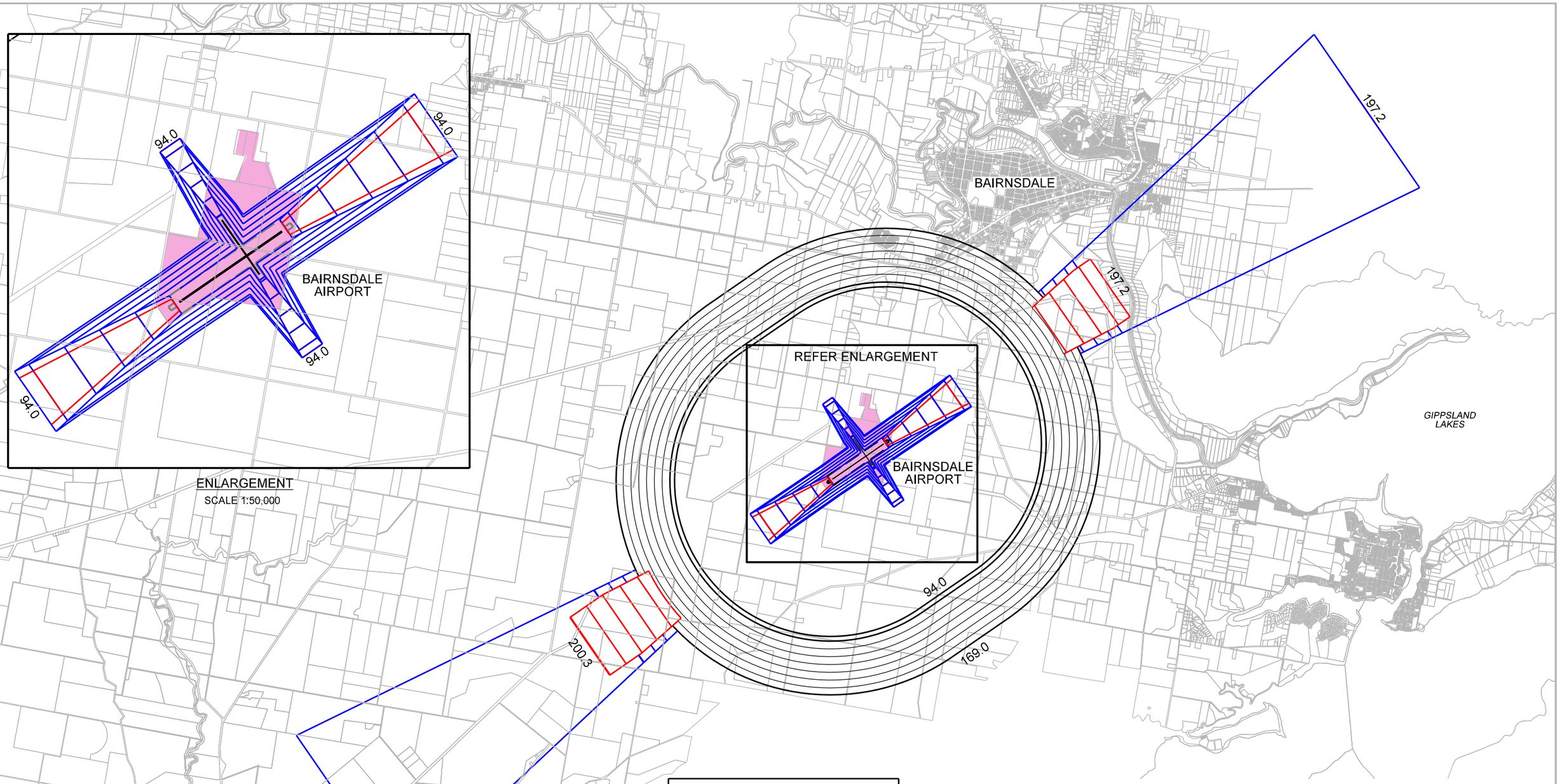
1:3,000 @ A3

30.06.2020 REV 3

FIGURE E3 M19127

ENLARGEMENT

SCALE 1:50,000



RUNWAY CLASSIFICATION / CODE		
RUNWAY	APPROCH	TAKE OFF
04	CODE 3 INSTRUMENT NON-PRECISION	CODE 3
22	CODE 3 INSTRUMENT NON-PRECISION	CODE 3
13	CODE 1 NON-INSTRUMENT	CODE 1
31	CODE 1 NON- INSTRUMENT	CODE 1

TRANSITIONAL SURFACE	
RUNWAY	SLOPE
04 / 22	14.3%
13 / 31	20%

INNER HORIZONTAL SURFACE			ARP / RED	
RUNWAY	ELEV.	RADIUS	ARP ELEVATION	-
04 / 22	94.0	4000	REFERENCE ELEVATION DATUM	49.0
13 / 31	94.0	2000		

CONICAL SURFACE		
RUNWAY	SLOPE	HEIGHT
04 / 22	5%	75
13 / 31	5%	35

NOTES:
1. ALL DIMENSIONS AND DISTANCES ARE IN METRES
2. ELEVATIONS BASED ON AUSTRALIAN HEIGHT DATUM (AHD)
3. HP DENOTES HORIZONTAL PLANE

APPROACH SURFACES										
RUNWAY	ELEVATION AT INNER EDGE	LENGTH OF INNER EDGE	DISTANCE FROM THRESHOLD	DIVERGENCE EACH SIDE	FIRST SECTION LENGTH	SLOPE	SECOND SECTION LENGTH	SLOPE	HORIZONTAL SECTION LENGTH	TOTAL LENGTH
04	47.2	280	60	15%	3000	2%	3600	2.5%	8400	15000
22	50.3	280	60	15%	3000	2%	3600	2.5%	8400	15000
13	49.7	90	60	10%	1600	5%	-	-	-	1600
31	48.8	90	60	10%	1600	5%	-	-	-	1600

TAKE OFF SURFACES							
RUNWAY	ELEVATION AT INNER EDGE	LENGTH OF INNER EDGE	DISTANCE FROM THRESHOLD	DIVERGENCE EACH SIDE	FINAL WIDTH	OVERALL LENGTH	SLOPE
04	50.3	180	60	12.5%	1800	15000	2%
22	47.2	180	60	12.5%	1800	15000	2%
13	48.8	90	60	10%	380	1600	5%
31	49.7	90	60	10%	380	1600	5%

REHBEIN Airport Consulting

BAIRNSDALE AIRPORT MASTER PLAN 2019

Future Obstacle Limitation Surfaces

NORTH

0 1.0 3.0 5km

1:100,000 @ A3

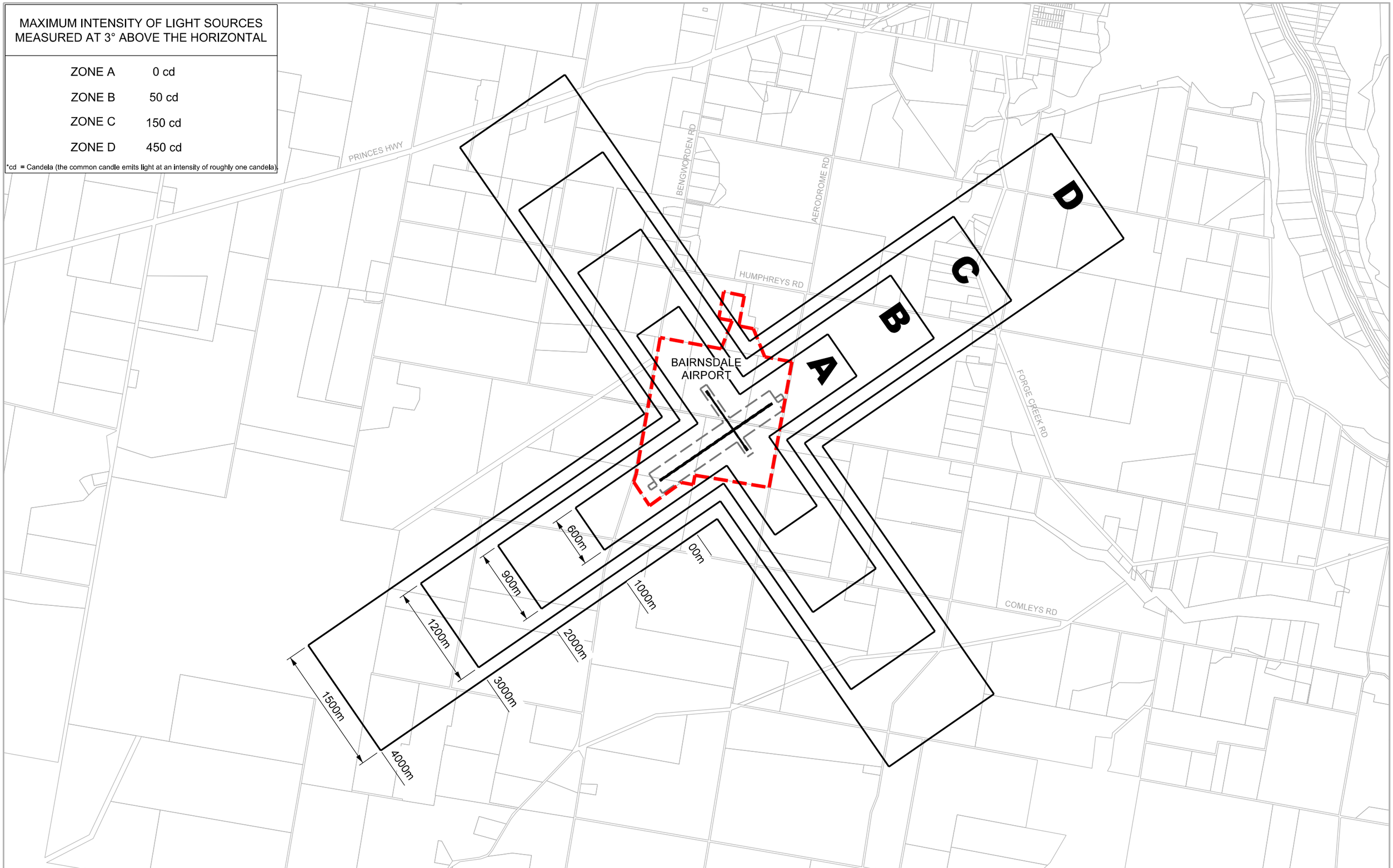
30.06.2020 REV 3

FIGURE F

M19127

MAXIMUM INTENSITY OF LIGHT SOURCES MEASURED AT 3° ABOVE THE HORIZONTAL	
ZONE A	0 cd
ZONE B	50 cd
ZONE C	150 cd
ZONE D	450 cd

*cd = Candela (the common candle emits light at an intensity of roughly one candela).



REHBEIN Airport Consulting

BAIRNSDALE AIRPORT MASTER PLAN 2019

Maximum Lighting Intensity Zones

NASF Guideline E: Lighting In The Vicinity Of Airports

NORTH

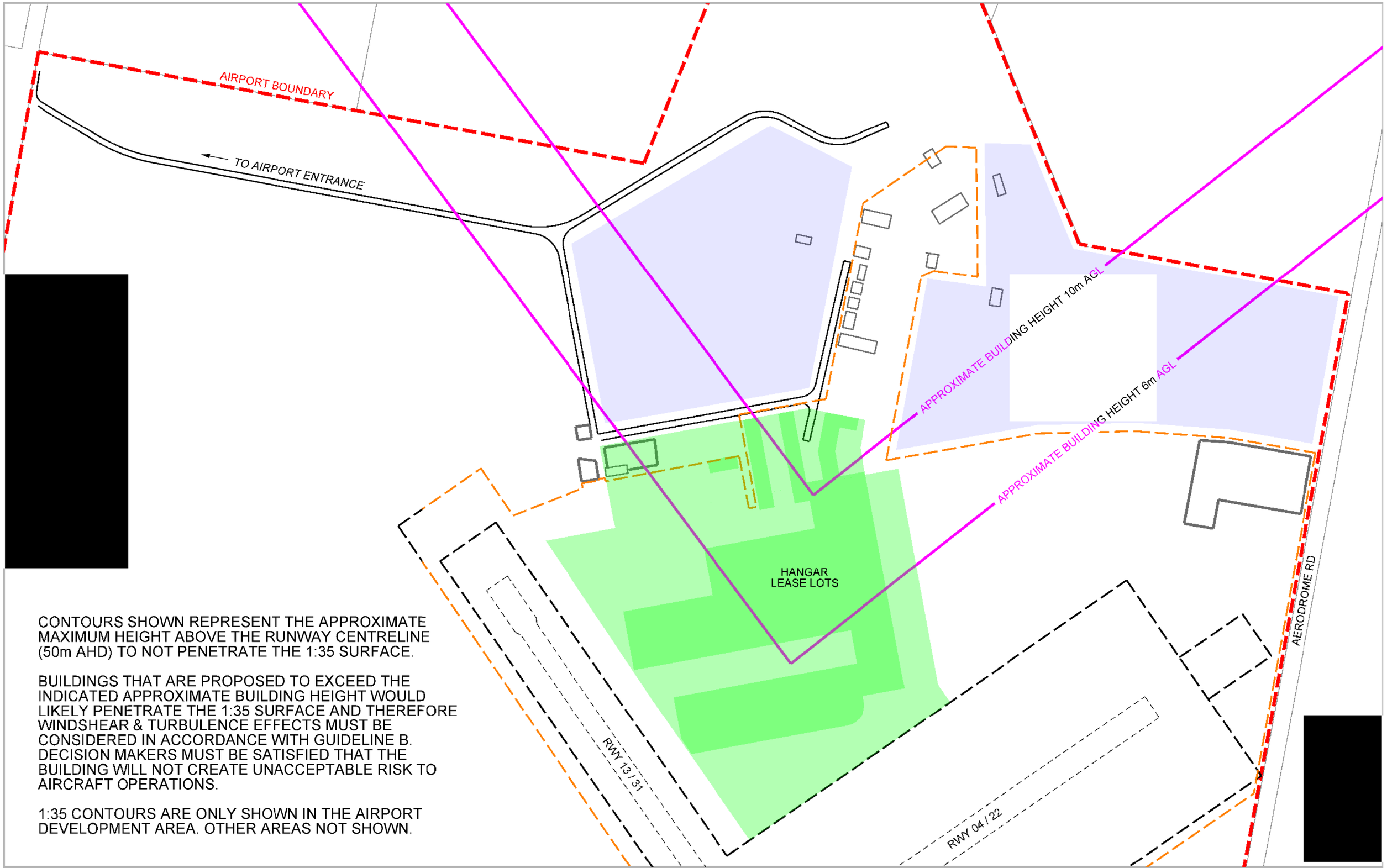
0 0.4 1.2 2km

1:40,000 @ A3

30.06.2020 REV 2

FIGURE G

M19127



[redacted]

CONTOURS SHOWN REPRESENT THE APPROXIMATE MAXIMUM HEIGHT ABOVE THE RUNWAY CENTRELINE (50m AHD) TO NOT PENETRATE THE 1:35 SURFACE.

BUILDINGS THAT ARE PROPOSED TO EXCEED THE INDICATED APPROXIMATE BUILDING HEIGHT WOULD LIKELY PENETRATE THE 1:35 SURFACE AND THEREFORE WINDSHEAR & TURBULENCE EFFECTS MUST BE CONSIDERED IN ACCORDANCE WITH GUIDELINE B. DECISION MAKERS MUST BE SATISFIED THAT THE BUILDING WILL NOT CREATE UNACCEPTABLE RISK TO AIRCRAFT OPERATIONS.

1:35 CONTOURS ARE ONLY SHOWN IN THE AIRPORT DEVELOPMENT AREA. OTHER AREAS NOT SHOWN.

[redacted]

REHBEIN Airport Consulting

BAIRNSDALE AIRPORT MASTER PLAN 2019

Building Generated Windshear & Turbulence 1:35 Surface NASF Guideline B: Windshear

NORTH

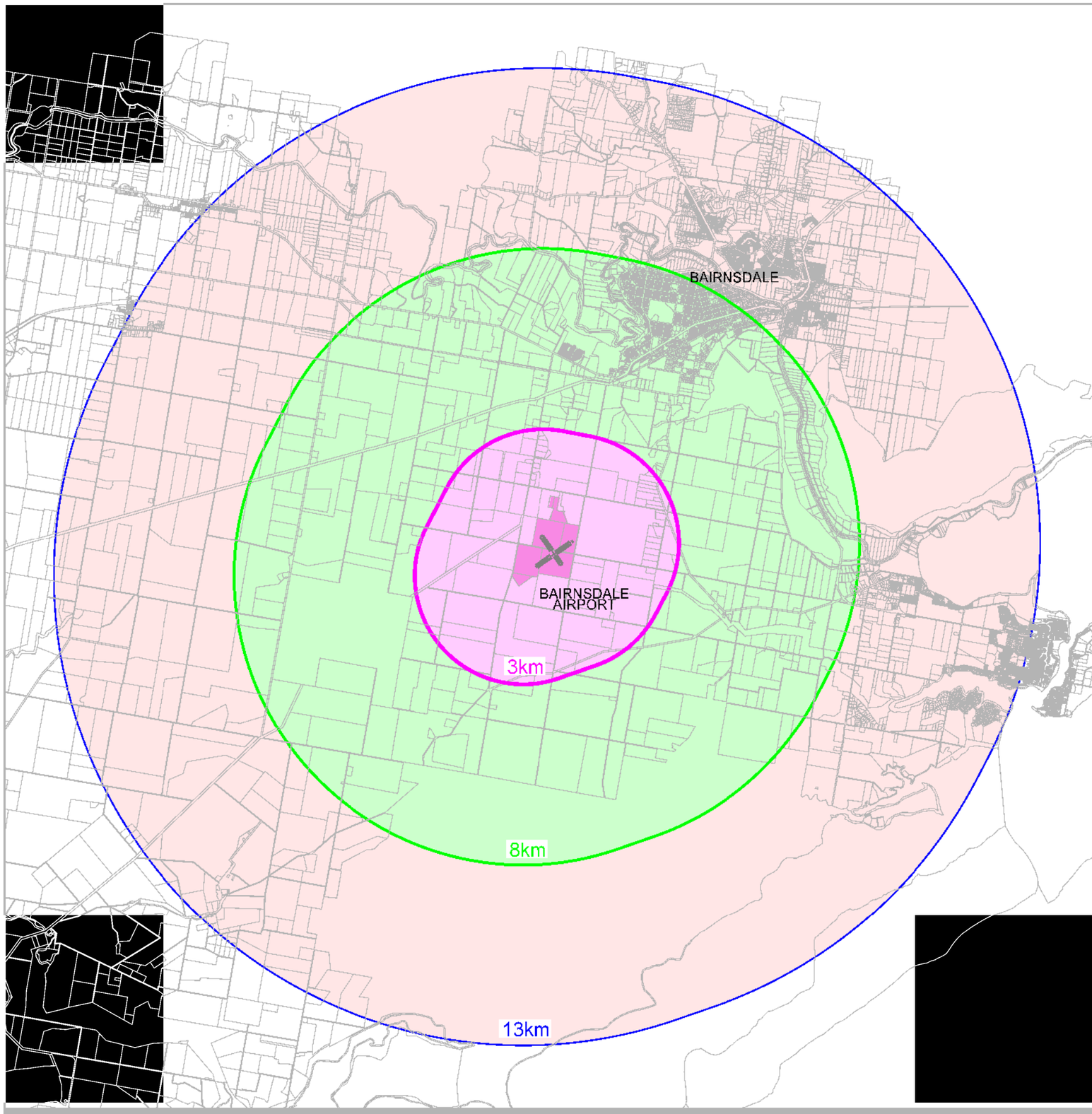
0 40 120 200m

1:4,000 @ A3

30.06.2020 REV 2

FIGURE H

M19127



Attachment 1: Wildlife Attraction Risk & Actions By Land Use

(This identifies the risk posed by a range of land uses & the actions required, if any)

Prepared by AAWHG at the request of NASAG — ATTACHMENT A:

Land Use	Wildlife Attraction Risk	Actions for Existing Developments			Actions for Proposed Developments/ Changes to Existing Developments		
		3 km radius (Area A)	8 km radius (Area B)	13 km radius (Area C)	3 km radius (Area A)	8 km radius (Area B)	13 km radius (Area C)
Agriculture							
Turf farm	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Piggery	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Fruit tree farm	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Fish processing /packing plant	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Cattle /dairy farm	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Poultry farm	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Forestry	Low	Monitor	Monitor	No Action	Monitor	Monitor	No Action
Plant nursery	Low	Monitor	Monitor	No Action	Monitor	Monitor	No Action
Conservation							
Wildlife sanctuary/ conservation area ? wetland	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Wildlife sanctuary/ conservation area ? dryland	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Recreation							
Showground	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Racetrack / horse riding school	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Golf course	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Sports facility (tennis, bowls, etc)	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Park / playground	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Picnic / camping ground	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Commercial							
Food processing plant	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Warehouse (food storage)	Low	Monitor	Monitor	No Action	Monitor	Monitor	No Action
Fast food / drive?in / outdoor restaurant	Low	Monitor	Monitor	No Action	Monitor	Monitor	No Action
Shopping centre	Low	Monitor	Monitor	No Action	Monitor	Monitor	No Action
Office building	Very Low	Monitor	No Action	No Action	Monitor	No Action	No Action
Hotel / motel	Very Low	Monitor	No Action	No Action	Monitor	No Action	No Action
Car park	Very Low	Monitor	No Action	No Action	Monitor	No Action	No Action
Cinemas	Very Low	Monitor	No Action	No Action	Monitor	No Action	No Action
Warehouse (non?food storage)	Very Low	Monitor	No Action	No Action	Monitor	No Action	No Action
Petrol station	Very Low	Monitor	No Action	No Action	Monitor	No Action	No Action
Utilities							
Food / organic waste facility	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Putrescible waste facility ? landfill	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Putrescible waste facility ? transfer station	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Non?putrescible waste facility ? landfill	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Non?putrescible waste facility ? transfer station	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Sewage / wastewater treatment facility	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Potable water treatment facility	Low	Monitor	Monitor	No Action	Monitor	Monitor	No Action

REHBEIN Airport Consulting

BAIRNSDALE AIRPORT MASTER PLAN 2019

Airport Buffer Zones
NASF Guideline C: Wildlife Strikes

NORTH

0 1.2 3.6 6km

1:120,000 @ A3

30.06.2020 REV 2

FIGURE J

M19127

APPENDIX B

Indicative Costs

Bairnsdale Airport Master Plan - Staged Development - Indicative Costs

Notes: All costs are indicative and have been prepared without survey or geotechnical information or a detailed scope of project inclusions. No warranty is given to the accuracy of the estimates, which are intended to give an indication for strategic planning purposes only. Further scope definition, investigation, design and local cost variations must be taken into account in order to develop a formal budget or tender estimate.

Stage	Element	Item	Qty	Unit	Rate	Cost
1A	AAV transfer facility (excludes building)	Builk earthworks and building platform	550	m2	$50	$27,500
		Additional access road (new access between facility and proposed hangars)	600	m2	$70	$42,000
		Power from terminal precinct	200	L.m	$300	$60,000
		Sewer to septic	1	item	$15,000	$15,000
		Water from terminal precinct	200	L.m	$220	$44,000
		Comms from terminal precinct	200	L.m	$200	$40,000
		Fencing	100	L.m	$100	$10,000
		Allowance for stormwater drainage (culvert across TWY, swale drain to existing	1	item	$50,000	$50,000
		Bulk earthworks and pavement for apron parking	1300	m2	$100	$130,000
		Preliminaries	30%	item	$125,550	$125,550
		Subtotal contract value				$544,050
		Contingency, design and management	30%	item	$163,215	$48,965
		Subtotal project cost				$593,015
		Indicative budget	**0.5**	**to**	**0.7**	**million**
1B	8 Code A hangar lots	Bulk earthworks and building platform	2600	m2	$50	$130,000
		Additional access road (new access west of hangars, extend existing road for east side of hangars)	600	m2	$70	$42,000
		Power from terminal precinct, no sewer or water	450	L.m	$300	$135,000
		Bulk earthworks and pavement for Code A taxilane and hangar access	2300	m2	$80	$184,000
		Fencing	250	L.m	$100	$25,000
		Allowance for stormwater drainage (culvert across TWY, swale drain to existing	1	item	$50,000	$50,000
		Preliminaries	30%	item	$169,800	$169,800
		Subtotal contract value				$735,800
		Contingency, design and management	30%	item	$220,740	$220,740
		Subtotal project cost				$956,540
		Indicative budget	**0.9**	**to**	**1.1**	**million**
1B	2 Code B hangar lots	Bulk earthworks and building platform	1900	m2	$50	$95,000
		Power from terminal precinct	300	L.m	$300	$90,000
		Sewer to septic	2	item	$15,000	$30,000
		Water from terminal precinct	300	L.m	$220	$66,000
		Comms from terminal precinct	300	L.m	$200	$60,000
		Bulk earthworks and pavement for Code A taxilane and hangar access	1800	m2	$80	$144,000
		Allowance for stormwater drainage (culvert across TWY C and A/E, swale drain to existing)	1	item	$100,000	$100,000
		Preliminaries	30%	item	$175,500	$175,500
		Subtotal contract value				$665,500
		Contingency, design and management	30%	item	$199,650	$199,650
		Subtotal project cost				$865,150
		Indicative budget	**0.8**	**to**	**1.0**	**million**

1B	Additional Wind Indicator	Illuminated Wind Indicator		1	item	$20,000	$20,000
		Power from hangar precint LV single phase airfield lighting		300	L.m	$50	$15,000
		Preliminaries		15%	item	$5,250	$5,250
		Subtotal contract value					$40,250
		Contingency, design and management		15%	item	$6,038	$6,038
		Subtotal project cost					$46,288
		Indicative budget	**$ 42,000**		**to**	**$ 56,000**	
1C	Terminal Precinct	Bulk earthworks, shaping and grading		3000	m2	$50	$150,000
		Sealed pavement (optional additional area)		1250	m2	$70	$87,500
		Stormwater drainage - allowance for outfall via hangar precinct connection/s to exising		1	item	$50,000	$50,000
		Fencing		100	L.m	$100	$10,000
		Preliminaries		15%	item	$44,625	$44,625
		Subtotal contract value					$342,125
		Contingency, design and management		15%	item	$51,319	$51,319
		Subtotal project cost					$393,444
		Indicative budget		**0.4**	**to**	**0.5 million**	
2A	Runway 04/22	Bulk earthworks, 90m x 1720m graded strip + RESAs, average depth 2m cut to fill		165600	m3	$20	$3,312,000
		Import select fill, 50% of runway pavement area average depth 1.5m		25800	m3	$100	$2,580,000
		Runway pavement, 300mm granular		15480	m3	$160	$2,476,800
		Bituminuous seal, 2 coat		51600	m2	$20	$1,032,000
		Runway lighting		1	item	$750,000	$750,000
		Fencing		3500	L.m	$100	$350,000
		Preliminaries		15%	item	$1,575,120	$1,575,120
		Subtotal contract value					$12,075,920
		Contingency, design and management		10%	item	$1,207,592	$1,207,592
		Subtotal project cost					$13,283,512
		Indicative budget		**12**	**to**	**17 million**	
2A	Taxiway A and apron upgrade to Code C	Bulk earthworks and pavement for Code C taxiway strengthening and additional apron pavement		5500	m2	$100	$550,000
		Preliminaries		15%	item	$82,500	$82,500
		Subtotal contract value					$632,500
		Contingency, design and management		30%	item	$189,750	$189,750
		Subtotal project cost					$822,250
		Indicative budget		**0.7**	**to**	**1.0 million**	
2B	4 Code A hangar lots	Bulk earthworks and building platform		1300	m2	$50	$65,000
		Extend access road east and west		500	m2	$70	$35,000
		Extend power, no sewer or water		80	L.m	$300	$24,000
		Bulk earthworks and pavement for Code A taxilane and hangar access		2200	m2	$80	$176,000
		Allowance for stormwater drainage (piped drainage in lieu of culvert/swale)		1	item	$50,000	$50,000
		Preliminaries		30%	item	$105,000	$105,000
		Subtotal contract value					$455,000
		Contingency, design and management		30%	item	$136,500	$136,500
		Subtotal project cost					$591,500
		Indicative budget		**0.5**	**to**	**0.7 million**	
2C	14 Code B hangar lots	Bulk earthworks and building platform		28500	m2	$50	$1,425,000

		Access road 500 m length	3500	m2	$70	$245,000
		Power from Stage 1	450	L.m	$300	$135,000
		Sewer - gravity outfall to existing treatment plant	1250	L.m	$250	$312,500
		Water from Stage 1	450	L.m	$220	$99,000
		Comms from Stage 1	450	L.m	$200	$90,000
		Bulk earthworks and pavement for Code B taxiway and hangar access	15400	m2	$80	$1,232,000
		Allowance for stormwater drainage	1	item	$250,000	$250,000
		Preliminaries	30%	item	$1,136,550	$1,136,550
		Subtotal contract value				$4,925,050
		Contingency, design and management	30%	item	$1,477,515	$1,477,515
		Subtotal project cost				$6,402,565
		Indicative budget	**6**	**to**	**7.0**	**million**
2D	Taxiway G	Bulk earthworks and pavement for Code C taxiway strengthening and additional apron pavement	11000	m2	$120	$1,320,000
		Taxiway edge lighting	1	item	$100,000	$100,000
		Preliminaries	25%	item	$355,000	$355,000
		Subtotal contract value				$1,775,000
		Contingency, design and management	30%	item	$532,500	$532,500
		Subtotal project cost				$2,307,500
		Indicative budget	**2**	**to**	**3**	**million**
3A	Terminal Apron	Bulk earthworks and pavement for Code C apron pavement	3200	m2	$120	$384,000
		Apron edge lighting	1	item	$25,000	$25,000
		Preliminaries	15%	item	$61,350	$61,350
		Subtotal contract value				$470,350
		Contingency, design and management	15%	item	$70,553	$70,553
		Subtotal project cost				$540,903
		Indicative budget	**0.5**	**to**	**0.6**	**million**
3B	Code B hangar lots	Bulk earthworks and building platform	14000	m2	$50	$700,000
		Extend access road 300m length	2100	m2	$70	$147,000
		Power from Stage 2	250	L.m	$300	$75,000
		Sewer connection to Stage 2	320	L.m	$250	$80,000
		Water from Stage 2	250	L.m	$220	$55,000
		Comms from Stage 2	250	L.m	$200	$50,000
		Bulk earthworks and pavement for Code B taxiway and hangar access	10800	m2	$80	$864,000
		Allowance for stormwater drainage	1	item	$100	$100
		Preliminaries	20%	item	$394,220	$394,220
		Subtotal contract value				$2,365,320
		Contingency, design and management	30%	item	$709,596	$709,596
		Subtotal project cost				$3,074,916
		Indicative budget	**2.8**	**to**	**3.7**	**million**